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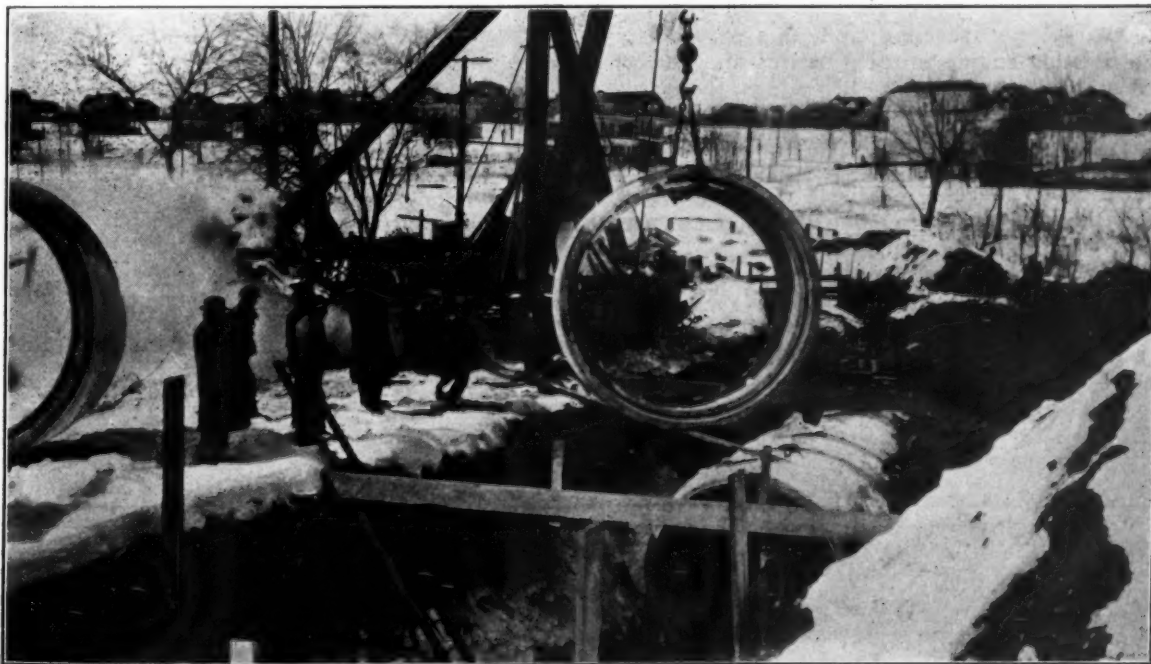
IRVINGTON'S SOUTH SIDE STORM SEWER

Reinforced Concrete Pipe Used for an Eight-Foot Sewer—Methods of Handling Pipes and Making Joints—Trench Excavated by Drag Bucket—Blasting Outlet Through Bridge Abutment—Itemized Prices.

The town of Irvington, N. J., now has under construction a new south side storm sewer system, the plans for which call for about 6,000 feet of 72- to 96-inch trunk line and several miles of laterals. This will eliminate the Skinkle brook and ditch which formerly carried storm drainage from a part of Newark and Irvington, and will permit the discharge through a 96-inch reinforced concrete sewer directly into the East Branch of the Elizabeth river. The total area drained by the new system is approximately 750 acres.

At present contracts for about 2,900 feet have been awarded. This includes section 1, which comprises 1,400 feet of 96-inch pipe, and section 2, comprising 1,500 feet of 84-inch pipe. John Dorer, of Irvington, is the contrac-

Bids were asked first on section 2, and the lowest bids received were \$9.90 per lineal foot for 84-inch reinforced concrete pipe, and the same for monolithic sewer of the same capacity. The reinforced concrete pipe was selected. On section 1 bids were asked on reinforced concrete pipe only, as the construction work was to be done in winter, and this type of material could be made and laid more readily in cold weather than any other form of construction. The contract price for the 96-inch sewer in section 1 was \$16 per lineal foot. The relative difference in the prices on the two sections was due partly to a rise in cost of materials during the time intervening between bids and partly to an additional depth of excavation averaging 3 feet.



LOWERING 96-INCH PIPE INTO PLACE, IRVINGTON SEWER.

tor for both sections. It was originally planned to construct section 2 first, deepening and widening Skinkle brook to serve as a temporary outlet; but this plan was abandoned when the county decided to pave Lyons avenue, in which the logical location for the sewer would be laid. The construction of section 1 eliminated the necessity for the improvement of the brook, thus saving about \$3,000. Action will be taken soon on sections 3 and 4.

The average depth of excavation for section 1 is 13 feet, ranging from 11 to 17 feet; and for section 2 is 10 feet. Owing to the size and depth of the sewer it is necessary to construct a sanitary sewer on each side of it. These are located in the same trench.

All of section 1, which is now under construction, is in open cut. Gravelly loam is encountered for the first ten feet, with rock below this. Some quicksand was

struck, necessitating sheathing, for which was used ordinary 2-inch planks, driven by hand and braced with 6-inch rangers.

The sewer outlet is under the Lyons avenue bridge, a concrete arched structure with a span of about 20 feet. A passageway 9 feet wide and 6 feet high had to be cut through the abutment of this bridge to allow the sewer, which at this point is rectangular in shape with the invert dished 6 inches deep, to enter. Blasting was considered the only feasible method and holes were drilled at the springing line of the arch to a depth of 9 feet, 22 holes, spaced 6 inches apart, being driven horizontally. At each end of this row of holes was drilled another row running vertically downward for 6 feet to the footing of the bridge. These three rows formed three sides of a rectangle, inside of which six holes, equally spaced, were driven to a depth of 7 feet. These were loaded with a total of twenty pounds of dynamite and fired. The result was a hole, almost clean cut, without damage to the bridge, the rows of drill holes preventing the spread of cracks.

On account of lack of height at the bridge the flattened section was adopted for the sewer at this point. This section was used for about 75 feet, where connection is made with the circular pipe.

A Marion No. 28 steam shovel, equipped with a boom and dragline, was used in excavating the trench. This method was adopted because of the width of the trench, which prevented the use of a "straddling" excavator. The shovel was therefore set on the projected center line of the excavation and moved back as was necessary. A $\frac{3}{4}$ -yard drag bucket was used and the earth placed along one side of the trench. The rock was taken out by pick and shovel after blasting. Since the rock excavation is usually kept but a little distance ahead of the pipe laying, this material excavated is swung back by the crane and used as backfill.

To remove the rock, handle the pipe and do other work of a like character, a traveling crane is used. This consists of a hoisting engine, stiff-leg derrick and bull-wheel mounted on a platform of 6 by 12 timbers, these in turn mounted on wheels rolling on steel rails. On a wheelbase of 26 feet, only four wheels can be used on account of friction on curves. The gauge is about 20 feet. By means of a cable attached to a dead man and to one of the drums, the outfit is able to move itself about as needed.

As fast as grade is reached, the pipe is laid. The 96-inch pipe is cast in 4-foot lengths. The walls are $8\frac{1}{2}$ inches thick and each section contains about 3 cubic yards of 1:2:4 concrete and weighs 11,000 pounds. To handle a pipe a chain is passed through it and it is lowered into place by the crane, the boom being so swung and held that the pipe being placed is set "home" in the bell of that

previously placed, the bell of which has been cut out at the top to receive the chain. When necessary to secure a close joint, blocks and tackle are used to draw the pipe home. One end of the tackle is fastened inside the completed sewer and the other end to a timber set across on the outer end of the section being placed, and this is then drawn tightly into place. With a force of 20 to 30 men, the average for this season of the year, 9 sections or 36 feet per day have been laid.

In filling the joints, a steel hoop or band is placed inside the pipe and over the joint seam, and 1:2 grout is poured into the joint from outside through the hole in the top referred to above. After the grout has set, the hoop is removed, allowing inspection of the finished joint.

The prices bid for the sewer section now under way were as follows:

Section 1.

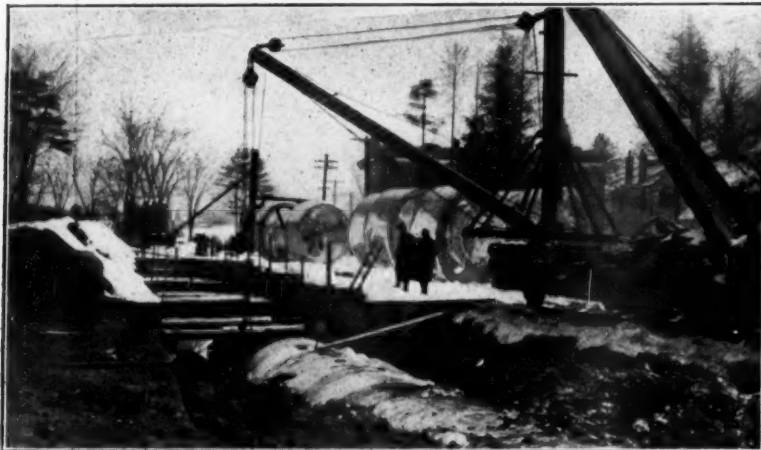
96-inch reinforced concrete pipe sewer, complete	\$16.00 per lin. foot
12-inch vitrified pipe sanitary sewer.....	1.05 per lin. foot
15-inch vitrified catch basin chutes.....	1.00 per lin. foot
Storm sewer manholes.....	50.00 each
Sanitary sewer manholes.....	45.00 each
Catch basins	60.00 each
1:2:4 concrete	10.00 per cu. yd.
1:3:6 concrete	8.00 per cu. yd.

Section 2.

84-inch reinforced concrete pipe sewer complete	\$9.90 per lin. foot
10-inch vitrified pipe sanitary sewer complete .....	.65 per lin. foot
12-inch catch basin chutes.....	.70 per lin. foot
Storm sewer manholes.....	35.00 each
Catch basins	50.00 each
Sanitary sewer manholes	35.00 each
Concrete retaining walls	6.00 per cu. yd.
Rubber concrete	5.00 per cu. yd.

Rock excavation is paid for at the rate of \$2 per cubic yard and quicksand at \$1.50 per yard.

The reinforced concrete pipe is furnished by the Lock Joint Pipe Co. of New York. I. J. Casey, Jr., town engineer of Irvington, has general supervision over the work. Winfield Sprague is superintendent in charge of construction for this contractor.



TRAVELING DERRICK FOR HANDLING CONCRETE PIPE.



ENTERING 96-INCH PIPE INTO BELL.

CARLISLE MUNICIPAL MARKET

Continuously Operated for One Hundred and Fifty Years—Various Uses Made of Present Market Building—Market Regulation

By JOHN C. HITESHEW.*

Carlisle, Pennsylvania, is a town of 11,000 population, the center of a prosperous farming community. The town has had a public market house for more than 150 years. The present market house building stands on the southeast quarter of the public square, in the center of the business section, known as the "square," of which nearly every small city boasts one. The site was given to the borough by the heirs of William Penn, to be used exclusively for market purposes.

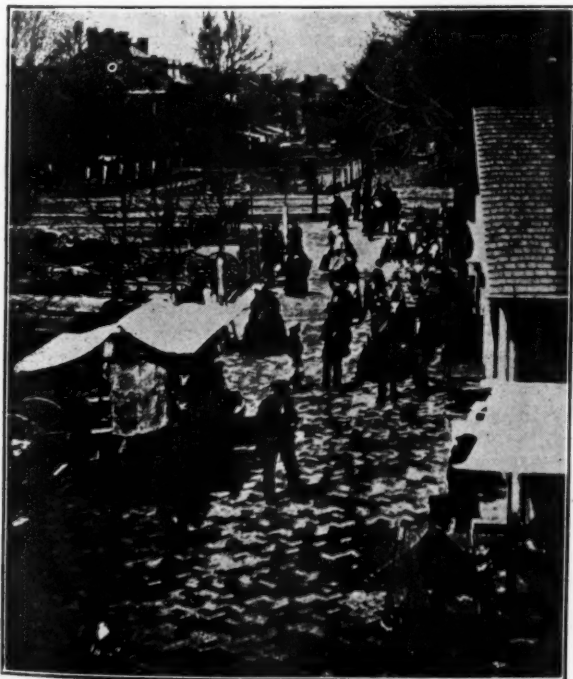
The first market house in Carlisle was built about 1765, six years after the town had been incorporated and fourteen years after it had been laid out. The second one was built in 1802 or 1803, and in 1836, it is said, became "a complete wreck in a gale of wind." It was rebuilt in 1837 on the west and south sides of the same quarter of the "square."

In 1878 "the business of the county was so much increased that a much more expensive structure was required," and the present one was built at an expense of \$20,000. However, the present valuation is estimated at \$35,000.

For years a public pump stood in front of the market house, but was removed about 1890, as a precaution against epidemics from public wells, the removal of which has been continued in later years, the last three pumps of the town having been ordered closed by the Board of Health within the last year.

The present building contains, in addition to the market itself, the office of the market master on the ground floor, and on the second floor the burgess' office, police court, Council chamber, Board of Health, and city engineer's office; and above the market master's office, the police headquarters. A small restaurant is run in connection with the market during market hours, at which sandwiches, coffee, etc., are served to market attendants.

*City Engineer of Carlisle, Pa.



THE PUBLIC MARKET IN THE SIXTIES.

All offices are heated with steam heat from a plant under the market master's office, and are lighted with electric lights. An excellent lighting system has just been installed consisting of thirty-six 200-candlepower lights with large reflectors, spaced twenty feet apart, and twenty feet above the floor.

The market contains 200 inside stalls. There are six longitudinal aisles, three 8 feet wide and three 10 feet, and one 8 foot and five 3 foot cross aisles. There are also 35 outside covered stalls along the east and south sides of the building, and portable stalls or tables are used on the other two sides.

From records taken back to 1814 (all previous records having been destroyed by fire at that time), it was found the average receipts per year have been as follows, during the different periods: 1844 to 1858, \$200; 1858 to 1870, \$1,000; 1870 to 1880, \$2,000; 1880 to 1884, \$2,500; 1884 to 1890, \$3,000; 1890 to 1915 inc. \$3,650; or a grand total of receipts from 1845 to 1915 inclusive, of \$159,069.26. The highest yearly income was in 1911, with receipts of \$4,714.07 and expenditures of \$812.49, or a net earning for the year of \$3,901.58.

Expenditures consist of market master's salary, coal, ice, miscellaneous supplies, and all repairs to the building. The total expenditures include every item of cost con-



OPEN MARKET USED UNTIL 1878.

nected with the market house with the exception of the cost of the building, which has not been charged against the receipts. Following are the average yearly expenditures during the different periods: 1844 to 1858, \$50; 1858 to 1870, \$125; 1870 to 1880, \$225; 1880 to 1884, \$300; 1884 to 1890, \$340; 1890 to 1915, inc., \$925; a total expenditure of \$34,900.89, or an actual net earning of \$124,168.37.

As seen from the figures, the market house has been a success financially as well as a great convenience and saving to the citizens of the town. It must also be taken into consideration that the saving in office rents for the several municipal offices has been considerable.

Following are the rules and regulations governing the market; which may be of interest to towns considering the opening of a municipal market as well as to towns now operating same:

Duties of Clerk of Market.—The clerk of the market shall keep exact standard weights and measures; it shall be his duty once every three months, or oftener if required, to try weights and measures of the inhabitants of the market; if same are wrong they shall be corrected by him at expense of the owner. Any person selling by short weights or measures shall forfeit same and pay a penalty of one to ten dollars.

He shall attend market every market morning, where said standard weights and measures shall be kept, and he shall weigh all articles brought to him and he shall be paid by the seller as follows: Not exceeding ten pounds, one cent; ten to twenty pounds, two cents; twenty to fifty pounds, three cents; fifty to one hundred pounds, four cents; and if over one hundred pounds, six cents. One-half bushel, one cent; one bushel, two cents, and two cents for each additional bushel. And double the above rates if measured on days other than regular market days.

He shall collect from any person selling on the square,

ten cents for each market day. Any person refusing payment shall forfeit two dollars for every offense.

He shall cause to be forfeited all butter under weight and sell same, and for every second or subsequent offense a fine of five dollars shall be imposed; it shall be his duty to keep names of all persons incurring penalty under this section.

It shall be lawful for persons to sell provisions, vegetables and fruits, provided same shall not have been previously purchased within the borough limits.

It shall not be lawful to expose for sale tainted meat or fish or any veal less than three weeks old when killed, under a penalty of ten dollars for each offense; half of which shall go to informer and half for the benefit of the poor.

No person shall sell hay (unless by stack) to be used within the borough limits without weighing, under penalty of five dollars; provided, that persons having scales may weigh hay for their own use.

Any person refusing to allow clerk of the market to test their scales shall pay twenty dollars for every such refusal.

Any person renting produce stall may sell fresh meat in any quantity upon the payment of thirty cents per day.

Duties of Borough Treasurer.—Every three months the borough treasurer shall furnish clerk of the market a list of persons who have paid for inner stalls, and if any person is found occupying stalls for which he has not taken license, the clerk shall notify the burgess in writing, who shall collect same; provided, that any person may occupy stall for one market day, first paying twenty-five cents or twelve and one-half cents for half stall. If the clerk shall neglect this he shall forfeit and pay fifty cents for each person occupying stall without license for each market day.



PRESENT MARKET HOUSE, NORTH AND WEST SIDES.

He is directed to offer at public sale Saturday, the 28th day of September, the butcher, restaurant, and other stalls in the market house, the highest bidder to have the first choice, the price bid to be in addition to the regular license and stall rent. After the first choice shall have been sold, the second choice shall be sold in the same manner, and so on as bids for choice of position may be offered, and the premium paid for choice at the sale shall entitle the buyer to a permanent occupation of the stall chosen by him so long as he shall pay the license fee and rent fixed from time to time by Council and shall comply with the ordinances and regulations relative to the market house.

Stall Rents.—The annual rent to be paid for produce stalls shall be: For four-foot stalls, \$7 per stall; for five-foot stalls, \$9 per stall; for six-foot stalls, \$11 per stall.

The annual rent to be paid for bakers' stalls shall be at the rate of \$1.75 per foot.

The restaurant shall be rented to the highest bidder.

The annual rent to be paid for fish stalls shall be at the rate of \$2 per lineal foot.

The annual rent to be paid for the stalls on the outside of the market house along the south and east side shall be \$10 per annum, and for those along the north and west side \$7 per annum.

Any person or persons who shall occupy any part of either of the four center squares of the borough of Carlisle during market hours and offer for sale any article of produce, meat, wood, chips, corn, etc., shall pay the sum of ten cents for every market.

Henceforth the license fee to be paid by butchers doing business in this borough shall be thirty dollars per annum for stall eight feet in length. When a licensed butcher selects and is allowed a twelve-foot stall, he shall pay \$15 in addition to the license.

Market Days.—The market days for this borough shall be Wednesday and Saturday, as set forth in the charter. No person shall purchase in this borough on any market day as aforesaid, nor on the afternoon or evening preceding market day, within or about the market house with the intention or for the purpose of reselling or shipping the same beyond the limits of Cumberland County, Pennsylvania, either wholesale or retail, with a view of supplying any other market or person abroad, any provision, poultry, fruit or anything brought for sale, under a penalty of \$5 for the first offense and \$10 for each subsequent offense.

Hours of Market.—From the first day of June till the first day of September the market shall open at 4 a. m., at which time all sales may begin and no sales shall be made before that time. From the first day of September to the first day of June the market shall open at 5 a. m.

STREET CLEANING IN SCRANTON

Use of Auto and Street Car Flushers, Machine and Hand Brooms—Unit Cost by Each Method—Work by Department Shops

The following information concerning street cleaning in Scranton, Pa., is found in the annual report for the year 1915 of John G. Hayes, director of the Department of Public Works; a report commendably complete concerning all of the activities of that department.

Hand and machine sweeping and flushing by auto flushers and street car flushers (the last furnished by the street railway company in compliance with franchise requirements) are used in the street cleaning. For the street car flusher the city furnishes two men to operate it, the company furnishing the motorman. Those streets in the central part of the city where tracks are laid were flushed every night, and those in other parts of the city twice weekly. The car used was originally built for sprinkling and cannot carry sufficient water, nor is the pressure (which is produced by a pump supplied with the car) sufficient. Rather than put the car out of commission for two months required to change it, it was used last year as it was; but this year it will give a minimum pressure of 30 pounds and a maximum of 70, instead of a minimum of 30 pounds as last year, the company paying for making the necessary changes.

For streets not carrying tracks, an auto flusher is used; and Mr. Hayes expects to reduce the cost of street cleaning fifty per cent this year by using a second flusher. "We find," says he, "that in going over streets but once, satisfactory results are not obtained. We have proven this by visits to different cities where flushers are in use and have concluded that the only practical and efficient way to clean streets is by the use of two auto flushers, one about one to one and a half minutes ahead of the other, the first flusher dampening the horse droppings and other materials that may stick to the pavement, thus loosening them, and the second flusher sweeping them away into the gutter."

In cleaning the central part of the city, hand labor was used for 109, 288,600 sq. yds. of cleaning at a cost of 17 cts. per thousand square yards, removing 13,484 cu. yds. Machine sweeping was used on 2,342,700 sq. yds. at 26 cts. per thousand, removing 529 cu. yds. Flushing was used on 236,000 sq. yds. at a cost of 18 cts., removing 306 cu. yds.

In the four other street cleaning sections hand sweeping was used for a total of 30,089,163 sq. yds. at costs of 23, 25, 16, and 35 cts. per thousand square yards, respectively. Machine sweeping was used for 25,501,783 sq. yds. at costs of 29, 25, 27, and 26 cts. respectively.

The labor supplied for the street car flusher cost 1.3 cts. per thousand square yards. That for the auto flusher cost 7.8 cts. (No estimate is made of the value of the water used, not of interest, depreciation, repairs, gasoline, etc., for the auto machine.)

The department operates a blacksmith shop, with two blacksmiths. These men shoe all the horses of the department, keep the tools sharpened and wagons repaired and do other odd jobs. Last year they applied 2,722 shoes, set 493, sharpened 5,109, applied 180 bar shoes, 34 rubber shoes and 141 Giant Grip bar shoes, packed 159

shoes, recalked 992 shoes, and repaired 238 wagons. The wages of the blacksmiths amounted to \$1,527.44. In 1914 the department paid \$2,363.57 for blacksmithing bills.

The following are given as the costs of catch basin cleaning in the five districts of the city:

Catch Basins Cleaned During 1915, Scranton Department of Public Works.

	Dist. A.	Dist. B.	Dist. C.	Dist. D.	Dist. E.
Number cleaned..	584	633	269	445	257
Cu. yds. removed	1,267	1,393	572	973	532
Cost	\$1,200.92	\$1,396.71	\$554.77	\$921.13	\$463.00
Cu. yds. per basin.	2.17	2.20	2.13	2.24	2.07
Cost per basin...	\$2.06	\$2.21	\$2.06	\$2.12	\$1.80
Cost per cu. yd..	\$0.95	\$1.00	\$0.97	\$0.95	\$0.87

PRACTICAL STREET CONSTRUCTION---STREET WIDTHS

SIDEWALK WIDTHS

Calculating Width Required per Pedestrian—Minimum Sidewalk Widths—Parking Strips Often too Narrow —Location of Such Strips

Concerning sidewalk widths there have apparently been even less definite ideas and arguments based upon actual observation than in the case of roadways. Mr. Hutchins, in the March 16th issue, spoke of a congested sidewalk in Park Row, New York, on which 3,000 people bound in one direction and 378 in the other passed along one sidewalk in fifteen minutes, giving 14.3 persons per foot of width per minute as representing a tightly packed sidewalk. He also states that New York officials consider that pedestrians should not exceed six persons per foot of width per minute for comfort, or about 40 per cent of the crowds which congested the sidewalk on Park Row.

If we consider the problem in detail, we find that, to move without crowding, there should be provided for each person an average width of $2\frac{1}{2}$ feet. (We have seen 2 feet given as a unit, but this would be sufficient only for persons walking elbow to elbow, as in the case of soldiers marching.) Also, as no one pedestrian is probably keeping step with those in front and behind him, it is necessary that he be separated from each of these by the full length of step plus the length of his foot and plus a clearance of at least another foot to prevent stepping on the heels of the one in front, giving approximately 5 feet as the space longitudinally of the sidewalk required for each pedestrian. This gives $12\frac{1}{2}$

square feet per person. Where the sidewalks are most crowded in the retail business district the rate of progress of the pedestrian probably does not exceed two miles per hour during the rush hours, since the crowding prevents any from moving more rapidly than the few slowest, and delay caused at street crossings affects the entire moving column. When streets are less crowded, it is possible for those walking more rapidly to pass those walking slowly, but this requires an extra $2\frac{1}{2}$ feet width for each person passed, and to permit perfect freedom of motion would seem to require an average width of 4 or 5 feet per person instead of $2\frac{1}{2}$, giving 20 to 25 square feet per person. In addition, sidewalks in front of retail stores, where the most crowding is generally found during business hours, must generally be sufficiently wide to provide for persons standing in front of the show windows.

Using these figures, the velocity of two miles per hour is equivalent to 176 feet per minute; and taking $12\frac{1}{2}$ square feet per person during rush hours, gives 14 persons per minute per foot width, or very nearly the figures of the actual count given above. Taking the second consideration, with 20 square feet per person and an average rate of $2\frac{1}{2}$ miles per hour (equivalent to 220 feet per minute) the calculation gives 11 persons per minute without any allowance for those standing in front of windows, entering and emerging from doorways, etc., nor for any interference along the curb by fire hydrants, posts, and other obstructions. This is something less than twice the figures used by New York as securing comfort for pedestrians. It would appear, therefore, that their calculations or counts upon which this figure is based would allow for more freedom of movement than that just described; and there can be no question that



Courtesy Barber Asphalt Paving Co.

EXCELLENT LOCAL RESIDENCE STREET—NARROW ROADWAY (ABOUT 25 FEET) AND WIDE PARKING (GIVING FLAT DRIVEWAYS). INSIDE PARKING COMBINED WITH LAWNS. FERRY AVE., DETROIT.

this is desirable, especially in districts where a large percentage of the pedestrians are women shoppers whose speed of walking would probably average less than that given; and also in view of the fact that greater freedom of motion is desirable than that provided by affording only sufficient space for moving at a uniform rate or occasionally crowding past those in front. It would seem probable therefore that an allowance of six or eight persons per minute per foot of width would give a desirable width of sidewalk, there being added to this two or three feet additional to provide for those standing in front of windows and entering and leaving store doors.

We still have left the difficult problem of estimating how many persons will wish to use the sidewalk during business hours generally, and how many of the employees or other occupants of the buildings facing thereon will use it in entering or leaving them within a very few minutes of the beginning and closing of business in said buildings. This number will depend to a large extent upon the nature of business carried on in the district, the average number of occupied floors in the buildings, the number of customers, employees or others which will probably visit such buildings for business purposes, and other considerations.

Probably the greatest congestion is that occasioned by factories, since all the operatives in these usually leave simultaneously at the stroke of the bell, while in office buildings there is a more gradual departure of clerks, business men and others. The number of operators permitted in a factory building is limited by law in many cities and states, this number being based upon square feet of floor area. The number of floors, however, is not often limited by law, but rather generally by economy in construction and operation. If we take a factory building 75 feet deep, 10 per cent occupied by walls, halls and other unused space and four stories high, and allow one operator to each 50 square feet of floor area, such a building would give 5.2 operators per lineal foot of street front. If we assume a block of such buildings 300 feet long and that all the operators in this block desire to travel in one direction, and that all will leave the several buildings within 10 minutes at quitting time, we would have the number arriving on the further corner of the block equal to 156 per minute. Allowing 8 per foot of sidewalk width per minute would give 20 feet as the width desirable.

In general, however, it is almost impossible to estimate what number of people a sidewalk will be called upon to accommodate. There may be some relation between the population of a city and the width of sidewalk desirable for the retail shopping district, but we know of no study which has been made along this line.

Aside from the question of *maximum* capacity of sidewalk, however, there is a minimum width desirable for numbers far less than such capacity. For instance, on even a local residence street, or one where there is comparatively little use of sidewalk, it is desirable that two persons be able to walk abreast or pass each other in single file without interference. On streets used for general traffic it is desirable that two couples be able to pass each other, the four being abreast at the instant of passing. There may be residence streets or ways serving only a few houses where even the minimum referred to may be reduced to that necessary for one person only, the occasional necessity for those moving in opposite directions to pass each other being met by having one step onto the roadway or lawn; but this would probably occur only in the case of what are sometimes called "residence parks" or similar sections in which the rural effect predominates.

For two persons to walk abreast or to pass each other, we have seen that four feet is the minimum and that five feet is preferable. Several cities have made the paved

portions of their sidewalks 4 feet wide, but this is generally believed to be inconveniently narrow, and either $4\frac{1}{2}$ or 5 feet is much more common. To permit two couples to pass each other would require double this width, with a slight added allowance for clearance between the couples and for persons of unusual size. Ten feet would seem to be the minimum for such a sidewalk. A great many cities have set 12 feet as the width of sidewalk (fixing it as one-fifth of the total width of street, and 60 feet as the standard street width), but perhaps in the majority of cases this 12 feet width is more or less obstructed by encroaching door steps, trees, etc.

We may say, then, that for local residence streets a paved way of $4\frac{1}{2}$ feet should be provided; while for all thoroughfares the minimum should be 10 to 12 feet, which should be increased to 15 or perhaps 20 feet in the main retail district. New York City, in reconstructing Fifth avenue and several of the streets in its retail business district, has made the sidewalk 25 feet where this can be obtained.

Most cities find it desirable for one or more reasons to plant shade trees along one or both sides of the sidewalk, and in the majority of residence streets to place these trees in a sodded strip following either between the curb and the paved portion of the sidewalk or between the latter and the building line, or both. Ordinarily the space allowed for the trees and also that for the sodded strip is narrower than it should be. Maples, elms and practically all shade trees, when they have attained approximately their full growth, have a trunk diameter of 15 to 20 inches, while at and immediately beneath the surface of the ground the spreading of the roots occupy considerably greater area. If the sidewalk pavement is placed too close to the tree it will be lifted from grade or broken by the growing trunk and roots; if a curb is placed too near the tree it is apt to be thrown out of line; while if there is no curb, but a sodded or planting strip is sloped down to the gutter, and if the gutter is too near the tree, the roots of the latter are apt to be exposed, to the disfigurement of the sodded strip and the detriment of the tree. For these reasons, a tree should be placed with its center at least $2\frac{1}{2}$ feet from either sidewalk pavement or gutter line, and $3\frac{1}{2}$ feet would be better. This would give a width of at least 5 to 7 feet between curb line and sidewalk pavement. This distance is frequently found reduced to three or four feet, but almost invariably with the results noted above if the tree has attained anything like full size.

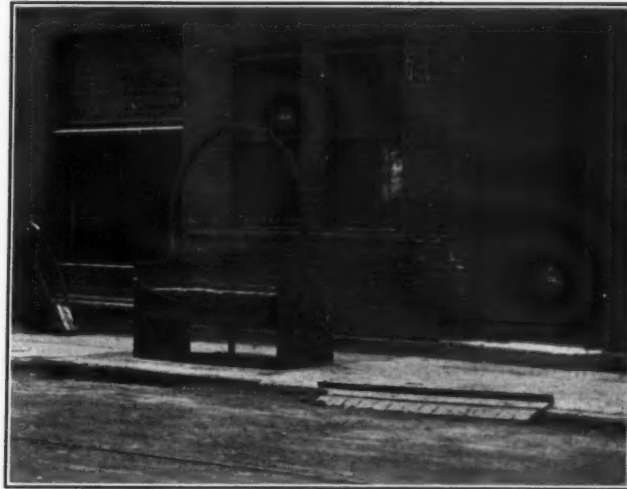
Aside from the question of trees, there is objection to having a sodded strip too narrow and 6 or 7 feet is much preferable to the 3 or 4 feet so often seen. One reason for this is that, either because it is difficult to mow (especially where there is no curb) or because it seems almost too trifling in size to pay attention to, it seems to be the general experience that narrow sodded strips are frequently neglected and allowed to grow untrimmed, while this is much less likely to be the case with the wider strips. Aside from this, however, in the opinion of most who have given thought to city planning, the appearance of a street is much more pleasing where wide sodded strips are used than where these are made narrow. Where the sodded strip is between the pavement and the property line and is joined on the other side of the property line by a lawn, and especially where there is no fence or hedge between the two, the above of course, does not apply to such strip, which is in fact merely a slight extension of the lawn and is trimmed and otherwise treated in connection therewith.

If we consider a residence street with shade trees and sodded strip, using the above suggested dimensions, we may have a minimum of 5 foot sodded strip and $4\frac{1}{2}$ foot pavement, or preferably a 7-foot strip and 5-foot pavement. In either case, but most certainly in the former,



On the left is shown a blocking of sidewalks by entrance steps which is so common as almost to pass unnoticed. Miles of such obstructions have been ordered removed in New York. This illustration also shows a telephone post which should have been moved to the curb line before the cement sidewalk was laid.

Courtesy U. S. Wood Preserving Co.



Courtesy U. S. Wood Preserving Co.



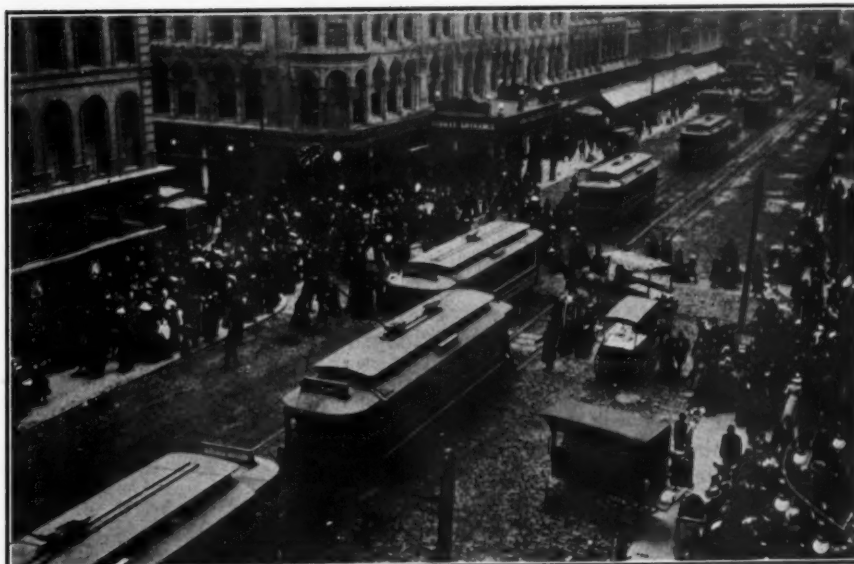
In the illustration above is shown a sidewalk on Larned St., Detroit, seriously obstructed by a freight elevator, which should be placed on the extreme outer or extreme inner edge of the sidewalk. A removable gutter bridge for hand trucks is seen at the right.

Below is a typical sidewalk crowd at the intersection of two main thoroughfares—Market and Eighth Streets, Philadelphia (before the subway was opened).

Courtesy Barber Asphalt Paving Co.

The upper of the two narrow cuts above shows a rather wide parking space on Ruhland St., Columbia, S. C., made ornamental with shrubbery; while immediately below, in contrast, is a parking altogether too narrow for planting trees or for appearance. The latter street has a roadway about 25 ft. wide, 2 ft.-planting strips and 5 ft. sidewalk pavements. Incidentally, this street (Perrysville Ave., Ben Avon, Pa.) illustrates the objectionable appearance of angles in a street rather than curves. The roadway has brick gutters of the unusual width of seven brick, with a bituminous pavement between.

The lowest illustration above shows Racine St., Chicoutimi, Quebec, with a sidewalk too narrow to give the street a well-balanced appearance or for convenience of pedestrians. Two couples could not pass walking abreast. The roadway, on the other hand, seems abundantly wide, even for the main retail street of a small city.



Courtesy U. S. Wood Preserving Co.

it is desirable that an additional space of a foot or two be left between the pavement and the property line to prevent the necessity of pedestrians crowding against buildings which have been placed on the property line. For this reason from 1½ to 3 feet should be added on the inside of the pavement, giving a total width of 11 to 14 feet.

Where the sidewalk pavement is placed immediately adjacent to the gutter and the planting strip, if any, be placed between that and the property line, this sidewalk width may be considerably reduced, allowing, say 5 feet for pavement and 2 feet for strip between this and the property line, or 7 feet altogether. This, of course, would provide for no shade trees unless these be placed on private property.

In planning the sidewalk width, as in the roadway planning, provision should be made for the possibility of

stake, for instance, mark the point on the leg 4.8 and, using this as a starting point, scratch a scale of feet and tenths in the leg. The H. I. can always be determined rapidly and accurately by holding the bob against the leg and reading the point of it on the scale. This method gives results within one or two hundredths, which is accurate enough, of course, in stadia work. As in ordinary methods of taking the H. I., accuracy can be checked by reading vertical angles both ways.

NORTH YAKIMA FIRE DEPARTMENT.

The fire department of North Yakima, Wash., contains only motor driven apparatus, the largest piece being a 75-ft. aerial ladder truck. All repairing and rebuilding of apparatus is done by the firemen, most of whom are

At the right is shown a cement sidewalk with no planting strip between it and the gutter, but a wide one next to the property line. The roadway is about 28 ft. wide, sidewalk 6 ft. and planting strips 15 ft. In the background are driveway bridges over the gutter, pierced by pipes in the gutter line.

Below is another typical illustration, Marlboro St., Boston, part of the sidewalk space completely occupied by entrance steps and private lawns.



FORDEN AVE., WESTMOUNT, CANADA.



ENCROACHMENT OF RESIDENCE STEPS, BOSTON.

a change in character of the street which would bring to it more extensive traffic than was anticipated, and a 10 foot pavement with 2 feet clearance next to the building lines should ordinarily be the minimum allowed for in fixing the total width between building lines. This matter of providing for possible future changes in width of sidewalk, as well as roadway, will be discussed in a future installment.

EASY METHOD OF GETTING H. I.

Carrying a measuring stick for getting the H. I. of a transit in stadia work is bothersome, and it takes time, especially on long shots, to have the rodman wait with his rod. A method of eliminating these inconveniences is as follows:

Set up the transit over a hub (the elevation of which has been obtained from the previous set-up), with the plumb bob point touching the tack, and take the H. I. by the usual method, but very carefully. Swing the bob against the tripod leg and mark the spot where the point of the bob reaches. If the H. I. is 4.8 above the

skilled mechanics, and this keeps the department at a high point of efficiency. During 1915, there were 107 alarms and 99 fires; the loss was only \$18,042, a decrease of nearly \$90,000 over the previous year. The department is housed in two pressed brick fire stations.

COST OF METERS IN READING.

The cost of operating and maintaining the meter system of Reading, Pa., during 1915 was \$4,161.72 for an average of 4,420 meters in service, or at the rate of 94 cents per meter per year. This is 30 cents less per meter than in 1914. The unit costs were as follows: Abandoned as scrap, 9.9 cents; clerical service, 31.0 cents; repairs, 27.5 cents; reading, 18.3 cents; delivering meter bills, 6.7 cents; stationery and supplies, 0.7 cents; total cost, 94.1 cents.

CRACKS IN PAVEMENT DUE TO CRACKS IN CONCRETE FOUNDATION.

Editor Municipal Journal,

50 Union Square, New York.

Dear Sir:—If not too late, I should like to suggest in reply to a recent communication from H. H. Tracy, city engineer of Norfolk, Nebraska:

Cracks in asphalt pavements due to cracks in the concrete foundation are often difficult to prevent. The method of putting in expansion joints, however, is a mistake, as this encourages the formation of surface cracks and the movement of the pavement. My observation is that the only foundation cracks, where the sub-grade is well drained and compacted, occur where the concreting work is stopped at night or for any period of more than an hour. Our specifications require the contractor to finish against a vertical plank set across the street at noon and at night, spading the green concrete against this plank as a form.

When concreting is resumed the plank is removed and the additional concrete placed directly against the old, puddled and spaded in order to get as tight a joint as possible. This gives a minimum chance for movement of the slab and any cracks formed are straight lines and much farther apart than would be possible if regular expansion joints were placed. This, by the way, is the Kansas City method of placing concrete pavement, as no joints of any kind are allowed except those that are absolutely necessary.

Thickening the foundation and increasing the ductility and penetration of the asphaltic cement used will also help to prevent wide, unsightly cracking. My chief complaint against asphaltic concrete is that it is deficient in healing qualities. Kansas City is using a fine graded asphaltic concrete containing about 17 per cent of material retained on a No. 10 screen and increasing the dust requirement so that the bitumen content may be increased, and the pavement furnish a smoother and better surface.

Yours truly,

CLARK R. MANDIGO,
Assistant City Engineer, Kansas City, Mo.

PHOTOGRAPHIC RECORDS OF PAVEMENTS.

The Bureau of Standards of the Department of Public Works of Portland, Oregon, has worked out a system of photographic records of all bituminous pavement laid in the city, which has proven a valuable asset in lawsuits and in controversies of an official or unofficial nature before the city council.

A sample is chopped out of the finished pavement, taken to the testing laboratory and sawed by means of a machine consisting of two pulleys around which No. 22

BUREAU OF STANDARDS

Contractor - Giesbich & Joplin Date sampled: 12-9-1915

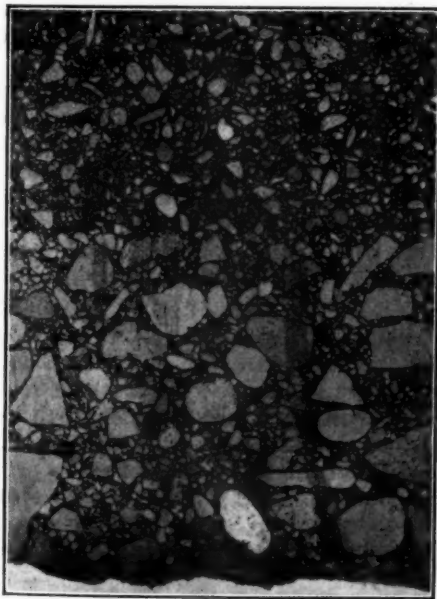
Contract - E Stark, Brooke St. to E. 70th St.

Length in ft. 2420.

Date of contract 9-3-1915

Location of sample:- Brooke St. 100 feet south of south curb line of Stark St. to 8 ft. from curb.

Asphaltic concrete on Bituminous Base.



SAMPLE OF WEARING SURFACE

A.C. -	11.45%	Sp. Gr. of finished top -	2.19
1	6.10	" " aggregate on 10	2.72
1	29.20	" " " passing 10	2.66
10	20.35	% voids - 3.9 in finished pavement	
40	25.00	% voids in aggregate -	27.55
200	7.90		
	100.00%		

SAMPLE OF BITUMINOUS BASE

A.C. -	6.50%	Sp.Gr. of finished base	2.42
2	6.40	" " aggregate on 10	2.75
1	28.90	" " " passing 10	2.67
1	31.75	% voids - 1.6 in finished pavement	
10	22.05	% voids in aggregate	16.44
200	4.40		
	100.00%		

Sp.Gr. of entire pavement as shown in photograph..... 2.51
% voids in total aggregate of same..... 20.14

PAGE OF PAVEMENT RECORD BOOK.

One-half actual size.

round wire is revolved and against which the sample is held on a movable platform. Wet emery is continually fed onto the wire and it slowly eats its way through the sample, cutting all the contents to a polished surface.

The face of the sample as cut is then photographed to actual size by the municipal photographer. The photograph shows the exact thickness of the pavement, the relative position of the various sized particles and their repose and distribution. In all cases the sample taken includes the entire wearing surface of the pavement. In some a sample of the base is taken also.

The sample is analyzed also to determine its specific gravity, the percentage of voids, the percentage by weight of asphaltic cement, and the percentage of the various sizes of particles in the mineral aggregate as obtained by screening.

The data so obtained are typewritten onto a page and the photograph of the sample is pasted on. The page becomes then a part of a loose leaf record book of pavements, forming a complete "Bertillon" record of the pavement. While the system of photographic records is not new, it is thought to be the first time it has been used on hard surface pavements by a municipality.

LIABILITY FOR DEFECTIVE SEWERS

Cities Not Liable for Injuries Due to Defects in Design, if Care Be Exercised in Preparing Same—

Rulings of Courts in Several States

By JOHN SIMPSON.

The duties of municipal corporations in adopting a general plan of drainage and determining when and where sewers shall be built, of what size and at what level, are of a quasi judicial nature, involving the exercise of deliberate judgment and large discretion, and depending upon considerations affecting the public health and general convenience throughout an extended territory; and it is well settled that a municipality is not liable for injuries to private property, not involving an unconstitutional taking thereof, which are referable to defects in the plan itself. *Johnston v. District of Columbia*, 118 U. S. 198, 6 Sup. Ct. 923. It has been held that this rule does not apply where a city constructs a sewerage system not according to any plan. *Hart v. Neillsville*, 125 Wis. 546. But cases where no plans have been adopted must be rare indeed, since the construction of any drainage improvement is almost necessarily preceded by the adoption of plans.

In Indiana it is held that actual negligence in adopting the plan will make the municipality liable, and this rule has been followed in cases decided in the courts of Kentucky, Wisconsin and the District of Columbia. In Wisconsin, a municipality was held liable where it had not exercised sufficient care in adopting the plan to warrant the belief that any legal discretion had been exercised at all. *Hart v. Neillsville*, 125 Wis. 546, 104 N. W. 699. "An infallible judgment," the Indiana Supreme Court says, "is not required to avoid liability, but the erection of a sewer (rendered necessary by street improvements) of such incapacity that every sane man knows in advance that it will not afford relief from the consequences of obstruction to the natural drainage caused by the filling of the street, would be dispensing with the use of common sense, and by no means consistent with that reasonable care which the law requires. It would, indeed, be carelessness most gross and wanton—not merely an error of judgment, but a failure to exercise judgment at all." *Indianapolis v. Huffer*, 30 Ind. 235.

In some states it is held that a municipality is not liable for damages caused by the construction of a sewer of capacity insufficient to carry off ordinary surface water,

rainfalls and sewage, the capacity of sewers to be constructed resting within the municipality's discretion. This is on the theory that as a municipality is not liable for a total failure to construct sewers, it cannot be liable for a partial execution of what it is not its absolute duty to perform. And in certain of these jurisdictions it has also been held that if a sewer was adequate when constructed, the municipality will not be liable for its subsequent incapacity caused by growth of the neighborhood and consequent increased demands on the sewer. The leading case on this subject is that of *Miles v. Brooklyn*, 32 N. Y. 489. Here the plaintiffs' lot was below the level of newly tormented and paved streets. Prior to this improvement the surface water had been absorbed by the earth. The city built temporary drains and sewers, but the plaintiffs' lot was inundated by rainstorms, and their grievance was that sufficient sewerage capacity to carry off the surface water from their lot and house had not been provided. "Their condition," the court said, "was certainly no worse than it would have been if no sewer at all had been constructed. So far as the one laid down operated, it relieved the plaintiffs' lot; but the relief was not adequate. If the defendants would have been liable if they had done nothing, they are of course liable for the insufficient character of the work which was constructed. But it is not the law that a municipal corporation is responsible in a private action for not providing sufficient sewerage for every, or for any, part of the city or village."

Elsewhere, however, it is held that if the sewer is not reasonably sufficient, or, in Illinois, if it is wholly insufficient, to carry off surface waters and sewage, and if this could have been known by the authorities in the exercise of reasonable care and judgment the municipality will be liable.

Of course, if a municipality itself, in grading streets or otherwise, changes the natural flow of surface water and constructs inadequate drains to carry it off, the municipality will be liable for resulting damage. But it has been held that the acceleration of the flow of surface water into a sewer by the construction of drains by a city will not render it liable for the overflow of a private sewer, if it does not divert the water from a natural course, which diversion would have emptied it into some place other than the sewer. *Brooks v. Maysville*, 151 Ky. 707, 152 S. W. 788.

There is no doubt that a municipality is not liable for damage caused by a sewer overflowing as the result of an extraordinary or unprecedented rainstorm, and casting water on private property. Whether such a rainfall is so extraordinary that the city authorities were not bound to anticipate and guard against it has been held to be a question of fact for the jury. And an extraordinary rainfall will not relieve the municipality where the drains are not adequate to care for an ordinary rainfall. *Richards v. Ann Arbor*, 152 Mich. 15. Its character of an extraordinary rainfall is to be tested by comparison with usual rainfalls. It need not be the greatest fall within memory.

A municipality will be liable if the construction of a sewer operates as a direct invasion of a property owner's rights by casting sewage on his land. This is equivalent to an appropriation of some enjoyment of his property to which the owner is entitled; and the public authorities cannot appropriate a man's property without making him compensation, whether it is done by excluding him from his land, or by flooding or otherwise injuring it. *Detroit v. Beckman*, 34 Mich. 127. A municipality cannot collect "sewage and filth and precipitate it upon the property of a citizen, even if the plan is devised in good faith and the best material is used in the construction. It is immaterial from which end of the sewer the discharge is made; the consequence and liability are necessarily the same." *King v. Kansas City*, 58 Kan. 334.

The authorities, which are numerous, are practically unanimous in holding municipalities liable for negligence in the construction of and for failure to repair drains and sewers, as well as to keep them free from obstructions. Here a municipality has ceased to act quasi judicially and acts ministerially and, having the authority to do the act, is bound to the exercise of needful prudence, watchfulness and care. *Barton v. Syracuse*, 36 N. Y. 54. Only in New Jersey is the contrary held; but even in that state, if a sewer gets out of repair, "occasioning a private nuisance exclusively, and the public authorities have been notified of the accident," then they owe a duty to the individual to put the sewer in a proper condition, and for the non-performance of that duty an action will lie.

A municipal corporation, it has been said, acts judicially in insisting on having sewer connections made under the direction of its officers and by its own workmen and contractors, instead of the private proprietors, for it would not do to allow all persons to break into the main sewer, and make connections at their discretion. Besides the inconvenience, the health of the community would suffer from such a course, for the nuisance occasioned by defective drainage may often give rise to a widespread evil, injuring many more than the persons on whose premises the cause of the nuisance exists. It seems a necessary policy, therefore, in the corporation to keep the matter in its own hands, for the welfare of the community, and no doubt that is its only reason. But then, as it does for good reasons prevent proprietors from making the connections they require, and obliges them to have it done by the city engineer and contractors, it is manifestly just and necessary that the corporation should see that the work be done as it ought to be. *Reeves v. Toronto*, 21 Up. Can. Q. B. 157. In this case it appeared that a citizen of Toronto, where the corporation takes upon itself the construction of connections required to lead from the houses into the main sewers, gave notice in the usual way to the committee of the council forming the board of works, that he wished a connection made, and paid the sum demanded. The connection was constructed under the superintendence of the city engineer, by the contractors of the city, but so unskillfully made that it would not carry off the water, and in times of flood the water and filth from the main sewer flowed back through the connection into the plaintiff's cellar, putting him to much inconvenience, which he had endured for several months without being able to obtain redress. It was held that an action would lie against the corporation, and that \$325 damages was not excessive.

The liability for neglect to keep sewers in repair, so that private proprietors receive injuries through the medium of connections with the sewers, which would not have been received had the sewers been kept in proper condition, is undoubted. And a back-flow into cellars connected with the sewers because of their having negligently been permitted to become obstructed or filled up will impose a liability.

If a municipality provides sewers to carry off surface water, it cannot abandon them so as to leave a lot owner in a worse position than he would have been in had the corporation not constructed the sewers; but where lot owners are not left in such worse position, the city is not liable for injury caused to such persons by the flow of surface water on such abandonment of the sewers. *M. Adams v. McCook*, 71 Neb. 789, *Atchison v. Challiss*, 9 Kan. 603.

A municipality is liable for injuries caused by sewers or drains over which it has control, though it need not have constructed nor need it own the sewer or drain. And the fact that a municipal sewer or drain is situated on private property does not relieve the municipality from liability.

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MARCH 30, 1916

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More "Sewer Gas" Explosions.

The number of explosions in sewers is increasing every year, and the amount of damage done by them is much greater than formerly, and the matter is becoming a very serious one. About two years ago we told of an explosion in a Pittsburgh sewer which cost the city several hundred thousand dollars in damages, repairs and reconstruction. In the issue of March 19, 1914, the matter was discussed at some length; and last week the news columns told of three explosions, one bursting open a dwelling, another a wire conduit, and the third, in Detroit, rupturing 4,000 feet of sewer and damaging manholes for double this distance.

The Detroit explosion is known to have been due to gasoline, nearly ten thousand gallons of which entered the sewer through a storm water inlet, having leaked from a tank car near by. The supposition is that the others also were due to gasoline fumes which entered the house and the conduit manholes through connections with the sewer. Certain it is that these explosions have increased in number and intensity since automobiles have come into common use; and if all are not due to gasoline entering the sewers, many have been, and the danger from this cause is a real one. Formerly most sewer explosions were laid to illuminating gas, and when gas companies admitted losses through leakage of 10 per cent or more of the gas manufactured, this could

not be wondered at. Gas mains are being made much tighter than formerly, however, and the leakage into the ground is less.

Most cities have passed ordinances forbidding the discharge of gasoline into sewers, but few, if any, enforce them rigidly. These frequent explosions suggest that more diligence should be employed by city authorities in discovering and punishing infractions of such ordinances. This is difficult, but by no means impossible. In our issue of April 8, 1915, we described a method used in Boston for detecting the presence of gasoline vapors in sewers. Such tests made at regular and sufficiently frequent intervals at every sewer manhole should reveal the presence of gasoline. To locate the source of it is perhaps more difficult, but we suggest the following as an additional test which should be made of each garage, private and public, and each dry cleaning establishment or other place where gasoline is used. Require that full plans be filed of the arrangements for draining every tank or floor which can in any way receive gasoline, and that these provide for intercepting the gasoline. Then test these by pouring into each such tank or floor outlet a bucket of gasoline (or of kerosene or other light oil, if this is considered dangerous), a man being stationed in the sewer manhole next below the property being inspected to watch for the odor and appearance in the sewage of the oil used.

Whatever the plan employed, it is becoming increasingly apparent that the authorities should use greater precautions against the discharging of gasoline into sewers.

Joints in Block Pavements.

Most instructive is a comparison between the wear on old style granite block pavements and that on the "new specifications" pavements to be found in several cities. The new pavements differ from the old chiefly in being constructed of blocks so cut as to secure closer joints and top surfaces more nearly plane. When first laid, a casual inspection would not discover any great difference between the pavements except that the joints are narrower. But after one or two years' wear one difference, at least, becomes very evident; the edges of the wide-joint pavement have begun to chip off and the stones to cobble, while in that with narrow joints there is little or no such action evident, but the pavement is apparently wearing smoother, and no faster at the joints than in the centers of the blocks.

The explanation probably is that where the joints are wide there is an impact of wheels in crossing them that fractures the edges of the blocks; while where the joints are so narrow as to prevent impact, the only wear is due to abrasion. The same theory would seem to apply to block pavements of any kind; and the conclusion to be that the closer the joints the less the wear as well as the smoother the pavement. Water-tight joints between blocks are impracticable without a filler of some kind. If not water-tight, the pavement would be unsanitary and suffer from frost and other objectionable results of permeability. There must therefore be a filler of some kind, so far as we can now see.

But neither grout nor bituminous filler can be made (in routine construction work) to fill a joint if the blocks are too close together; even though the pavement be sprinkled for grout filler, or bituminous filler be applied only in hot weather. Some joint space from top to bottom of block is therefore necessary.

It is the top of the joint which affects the wear, and it would seem most desirable therefore to insure that this be at least no wider than the rest of the joint; and this means that the edge of the block be square, rather

than rounded or beveled. At first thought it would seem that the square edge would break off more readily, but apparently this is more than offset by the minimizing of the impact of vehicles, and the practical test seems to demonstrate that the edges do not suffer, and that the pavement is not only smoother to begin with, but that wear increases the smoothness.

The above would seem to apply especially to stone and brick, and to imply that a wire-cut brick, with its sharp edges, is preferable to a repressed brick with rounded edges; and that the joints between these should be made the narrowest into which filler can be successfully poured. The least practicable width having been ascertained by experience, every joint should be made as nearly this width as possible. This would apparently eliminate spacing joints by eye and require some kind of positive mechanical spacing, the simplest of which would seem to be a projection or lug on the side of the brick.

As in the case of stone blocks, experience seems to demonstrate that the sharp edges of the brick, if the joints are laid close, do not chip off any more than, if so much as, the rounded corners which produce impact. In fact, if impact could be entirely eliminated from a pavement the wear would be greatly reduced. Any road man knows that a small hole formed by a loosened stone enlarges very rapidly under the impact of wheels; that a hole forms in any pavement where a wheel drops onto it from a too high manhole head; and it is largely impact which causes rapid wear at a transverse joint between two paving materials of different resiliency.

Impact is an enemy of pavement durability, and every effort should be made to secure a road surface which, by its smoothness, will reduce impact to a minimum, and then to keep it smooth by constant attention and prompt repairs.

BOSTON WATER WORKS NOTES.

The city of Boston had in use, at the end of the fiscal year of 1914-1915, 838.6 miles of mains, 104,627 service taps and 48,063 meters. Of these meters, 17,990 were tested during the year; 4,565 were repaired in the shop and 745 in service; 442 were condemned and 1,147 were discontinued, 728 on account of damage by frost. Meters were changed for the following reasons: For testing, 747; not registering, 1,466; no force, 119; stoppage, 30; enlarged, 53; spindle leak, 231; coupling leak, 68; frost, 1,013; set backward, 30; relocated, 81; clock defaced, 522; miscellaneous, 120.

There were 9,132 public hydrants in service, of which 3,319 were "Boston" post, 2,956 were ordinary post; 204 were Boston, 1,770 were Lowry and 703 were Boston Lowry. Hydrants were inspected, oiled, cleaned and pumped out on account of cold weather to the number of 52,575 at a cost of \$6,193; giving about $5\frac{3}{4}$ inspections per hydrant, on the average. Sixty-eight hydrants were thawed out at a cost of \$145.52, and the Fire Department was furnished with 1,216 sacks of salt for use in fire hydrants. In addition, 1,006 hydrants were painted at a cost of \$287.29; 691 boxes were reset or repaired, 639 hydrant barrels were changed, relocated, reset or repaired, and streets were repaved at 213 places because of such changes.

There were 11,747 gate valves on the system (average for the year), and of these 3,024 were inspected, oiled, tested, frames and covers replaced, etc., at a cost of \$1,483; 608 gate boxes were renewed at a cost of \$7,800; 1,267 gate boxes were cleaned out and 512 raised or lowered; 7,283 gates were salted; 23 were repaired, and 52 were leaking at packing. It cost \$1,567 to repair 132 leaking joints in

the mains, and \$2,053 to repair 44 leaks due to settlements.

The waste prevention branch examined 37,307 premises, made 4,248 special investigations and 13,355 waste reports, re-examined 12,303 premises and found that 11,462 had made the required repairs and 841 had not, and shut off 17 services for waste. Defective and leaking fixtures were found as follows: Tanks, 7,581; faucets, 4,127; hopper cocks, 66; pipes inside, 519; pipes outside, 184; hydrants, 14; wilful waste, 68; metered premises with defective fixtures, 802.

Leaks in service pipes were found as follows: Defective corporation cocks, 39; defective church cocks, 41; pet cocks, 1; sidewalk cocks, 24; couplings, 71; collar bolts, 1; elbows, 1; gates, 16; joints, 40; packing, 3; pipes, 450; valves, 2. Electrolysis injured 13 services, and 9 were gnawed by rats; one was "eaten by ashes"; pick holes were found in 17; settlement of trenches damaged 485 services.

The water service of the Public Works Department of Boston maintains blacksmith, carpenter, machine, pattern and plumbing shops. The machine shop during the fiscal year of 1914-1915 manufactured 73 post hydrants, 350 gates from 3-inch to 16-inch, 5,000 sidewalk and corporation cocks and about 15,000 nuts, couplings, plugs, etc. The machine shop also repaired 60 valves, 177 fire hydrants and 2,000 cocks, couplings, etc., for service pipe work. It also repaired 47 autos and did other miscellaneous work, the cost of all the repair work totaling \$2,232. Post fire hydrants made are figured as costing \$46.15 each, of which the labor amounted to \$15.50, stock \$24.18 and 45% of the labor was added, as in the case of all work done in the machine shop. The total cost of manufacturing the gates figured on the same basis was as follows: 3-inch gates, \$11.65; 4-inch, \$14.45; 6-inch, \$22.05; 8-inch, \$29.50; 10-inch, \$42.94; 12-inch, \$52.77; 16-inch, \$83.69.

The blacksmith shop sharpened 5,856 picks, 743 bars and 2,673 chisels, at a cost of \$1,108. It also repaired 3,518 tools, made 502 new tools, repaired 57 wagons, buggies, autos, etc., and did miscellaneous work valued at \$88.80; the cost of all blacksmith work being \$2,691.

The carpenter shop manufactured street hydrant boxes at an average cost of \$4.78 each; 31 large gate boxes at an average cost of \$5.45 and 30 post hydrant boxes at \$5.56 each; 18,345 wedges for main pipe work and concrete boxes; 3,690 brackets and shelves for the meter department, and several thousand more wooden boxes of one kind or another. It also did repair work costing \$5,560, such as fitting up a new meter testing room, repairing stables, floors, roofs, wagons, fences, etc., in and around the various properties owned by the department.

The pattern shop made 44 new patterns, repaired 101 patterns, changed 3 and did miscellaneous work, the total cost being \$2,283. The plumbing shop did work costing \$223.35, most of which was for repairs in yard, shops and stables, repairing pumps and miscellaneous work. In addition to the work above referred to, \$1,193 was spent for stock and labor in fitting up the new meter testing room, and miscellaneous repairs and painting cost \$3,969.

STREET SPRINKLING IN MANKATO.

A departure from the customary procedure connected with street sprinkling was tried in Mankato, Minn., during 1914. The cost of sprinkling, oiling and flushing was paid by the city at large and not assessed against the property along the streets where the work was done, as has been the practice in the past. This change was made on the ground that the prevention of dust on streets may as readily be classed a sanitary measure and a public benefit as street cleaning or other street work which is done at the expense of the city at large. Almost the entire city is included in the sprinkling district.

The WEEK'S NEWS

Road Tax Apportionment in New York and Wisconsin—State Highways of Illinois and Arkansas—Detroit's Sewer Explosion—Sewerage Survey of Columbus—New York Losing Water Pollution Fight—Free Municipal Light for Pittsburgh—Big Fires Sweep Southern Cities—New Jersey's Finance Bills Vetoed—Trade Waste in New York—Schenectady's Garbage Plant Profits.

ROADS AND PAVEMENTS

New York City to Pay for State Roads.

Albany, N. Y.—The Assembly has passed the annual appropriation bill for state aid for town and county highways, carrying more than \$2,000,000. At a conference held by Mayor Mitchel and New York City legislators several weeks ago it was unanimously voted by those present to oppose the payment by the state of any more money for the support of local roads, of which New York City pays 68 per cent, with no benefit. These appropriations are for no part of the state highway system. Republicans and Democrats cast aside party affiliations and almost solidly voted as up-state against city.

City Refuses to Pay County Money.

Madison, Wis.—Efforts to dissuade the common council of Madison not to start legal action to test the validity of the state highway law have not been successful. For a second time the council has gone on record as refusing to pay over the city's share of money to the county, except at the end of the law suit. The amount the city owes the county is \$47,110.58. The county board announces that an action will be immediately started against the city treasurer to collect the money and that this action will throw the entire matter into the courts. The legal result of this litigation will affect every city in the state.

Road Construction in Illinois.

Springfield, Ill.—Twenty million dollars will be available for expenditure in improving the roads of Illinois within eighteen months through bond issues which are being considered in thirty counties in all sections of the state, according to report from Springfield. Bond issues for that amount have already been favored by boards of county supervisors and many other counties have taken first steps toward improving the highways under the amendment to the good roads law, which allows counties to spend the state-aid allowances to pay off bond issues. The issues range in amounts from \$500,000 to \$2,000,000. In Cook county the amount is \$2,000,000, the bond issues having been legalized at the last special session of the state legislature. In most of the counties where the bond issues have been authorized by the county commissioners, the residents will vote on the proposal at the spring and autumn general elections. In others the propositions will be submitted to the people at special elections. According to estimates made by the state highway commission, more than 4,000 miles of roads in the state would be improved under the special bond issues. The counties where good roads bond issues are nearly ready to be submitted to the voters are: Stephenson, Winnebago, Lake, DeKalb, Kane, Dupage, Will, LaSalle, Peoria, Livingston, Kankakee, Iroquois, Adams, Edgar, Clark, Madison, St. Clair, White and Williamson. The amounts which it is proposed will be issued in some of the counties are as follows: Madison, \$1,500,000; LaSalle, \$1,500,000; Will, \$1,500,000; DeKalb, \$1,000,000; Stephenson, \$850,000; Winnebago, \$1,250,000.

Under the state-aid plan the state pays for the entire cost of maintaining concrete and brick roads and one-half of the maintenance of macadam and gravel roads and all on dirt roads. The state also pays for one-half of the cost of construction. Under the present law, which was designed to standardize the roads of the state according to the amount of traffic they will have to bear, each county, instead of paving a small portion of the roads each year

by the state allotment, will be permitted to complete the work as quickly as possible, pay for it by issuing bonds, and then apply the state allotments of the future toward paying off the bonds. "Under the old system the county board would improve a certain roadway through the county and immediately the road would be called upon to bear an abnormal amount of traffic, all the traffic which could possibly be centered on the improved road forsaking the unimproved highways," said W. W. Marr, chief highway engineer. "If the commissioners were able to improve several roads the traffic would be distributed more equally, and the improved roads would not be destroyed and damaged. Another fault with the old system was that roads in various parts of the state were improved in a certain way without regard for the amount of travel they would be called upon to bear. One of the first things we do when we go into a county is to prepare a chart, showing the amount of traffic on the roads, and with the figures as a basis work out the forms of improvement required. Where the traffic is light and the roadbed good, a dirt road is sufficient. In other parts of the county where the traffic is heavy or the roadbed soft, other forms of pavement are necessary. These are worked out by our engineers, and when the county board is ready to consider the bond issues, we have data at hand which will aid it to determine which pavement should be used on the various roads."

Foot-Front Assessment Legal.

Lebanon, Pa.—The foot-front assessment rule employed by the city of Lebanon for the payment of wood block paving has been declared legal in an opinion filed by Judge C. V. Henry, president judge of the Lebanon County Courts, in the equity suit instituted by Daniel P. Wilmyer, a property owner. Wilmyer opposed payment of the assessment on the foot-front plan with respect to his business property, claiming the thoroughfare was a permanent macadam street under the provisions of the act of 1913. The decision is one of far-reaching importance, because it promises to dispose of all opposition to the foot-front rule of assessment in the city paving plan.

Highway Construction in Arkansas.

Little Rock, Ark.—Highway construction in Arkansas in 1915, according to statistics of the state highway department, totalled 144 miles, costing \$771,000, in roads either completed or now under construction, and preliminary surveys and estimates for 860 miles, estimated to cost approximately \$4,860,000, have been made so far as a start for 1916 road work in the state. These figures are only for roads for which the highway department has made preliminary surveys and estimates and helped in organizing the districts. Passage of the Alexander road law, on which a test case now is pending in the supreme court, was influential in creation of a majority of the road districts. W. B. Owen, state highway commissioner, believes that even greater activity, if the law's constitutionality is upheld, will be evidenced during the coming two years in road and bridge construction work in the state. There was approximately \$40,000 collected by the department in 1915 from automobile licenses. In addition, fees derived from the state land office, which is incorporated in the highway department went into the highway improvement fund and in turn helped support the department. Outside of the expenses of the department there was about \$23,000 left. Under the law this money should go to aid counties in actual construction of roads, but the last legislature made no appropriation for such purposes. Hence, it has remained

in the state treasury. The department does not now do, nor does the law intend, actual building of roads. It makes preliminary surveys and estimates and lends any assistance possible to county courts, proposed road districts or individuals attempting to form road districts. It furnishes engineers to survey and determine the most advantageous routes and to figure estimated costs of various kinds of construction. Less than one-half of the money collected from automobile taxes goes to the state. Under the law the counties get one-half of the tax collected from automobile owners, leaving \$5 from each license for the state. But the state must pay the sheriffs 20 cents for each license fee collected and the county assessors 25 cents for each automobile assessed. In addition the state must pay for the metal tags, receipt blanks, stationery, and such. Out of funds collected by the state three commissioners, two of whom are paid only when they attend monthly meetings, draw salaries, in addition to two regular engineers, two automobile tag clerks, field note man, one stenographer and two clerks in the land department. During the rushing demand for surveys last fall it was necessary, at times, to employ as high as six extra engineering crews.

Plans for Camden-Philadelphia Bridge.

Philadelphia, Pa.—Plans have been drawn for a \$20,000,000 bridge which it is hoped some day will span the Delaware River between this city and Camden. The structure as planned calls for a high-level, double-deck cantilever steel bridge, over which trolley tracks, auto speedways, truck decks and footways are to extend. In the movement a board made up of Philadelphia officials will co-operate with a commission already named by Camden, Burlington and Gloucester Counties and one recently appointed by Governor Fielder. The proposition is for the three Jersey counties to bear half the estimated cost.

Roads for Horses.

Albany, N. Y.—The legislative committee of the New York State Association of Horsemen is preparing to present a bill before both houses providing that all state highways hereafter built be paralleled by six-foot dirt or gravel drives on either side for horses. The legislative committee is headed by former state highway commissioner John N. Carlisle. It is expected that the horsemen will have the backing of the New York state grange and possibly of the automobile interests and the Safety First Society in asking favorable action on their measure. The creation of safe roads for horses was one of the purposes for which the horsemen organized, while the fact that the sidepath scheme would not only widen the highway but keep the macadam center free of horse traffic, has won many motorists to the plan. Macadam and similar surfaces have proven impracticable for horses.

Boston, Mass.—As the result of four bills asking for improved state highways which will be more safe for horses, the committee on roads and bridges has voted to order the state highway commission to take certain portions of such highways as it may see fit for the purpose of conducting experiments in surfacing, with the idea of ascertaining which surface material is best suited to the use of the horse. The resolution will authorize the commission to utilize portions of state highways for double surfacing, the center for auto travel and each side not less than

six feet in width for horse travel. This is the result of much agitation recently in favor of the horse, the proponents of the bill contending that most of the highways now are constructed only with a view to pleasing autoists. The highway commission is ordered to report the results of its experiments to the legislature of 1917 not later than January 10.

Bridge and 400 People Fall Into River.

Johnstown, Pa.—When the Woodvale bridge sagged under the weight of six delayed trolley cars and fell into the Conemaugh River about 400 men in the cars and standing on the bridge went down with the structure. Two were badly hurt and a score slightly injured, but the remainder escaped, as the river is only three feet deep at this point. The cars as they crashed together did not telescope, and those imprisoned within made their escape through the windows. The weakness of the bridge had long been recognized and some time ago plans for a new structure were prepared. The bridge was constructed about twenty years ago.

SEWERAGE AND SANITATION

The Detroit Sewer Explosion.

Detroit, Mich.—The accompanying illustration shows a view of the street blown up by the explosion of gasoline in a sewer described in these pages last week. The leakage from the tank was observed about 8 hours before the explosion occurred, but it could not be stopped. The sewer is about 16 feet deep, except at the subways, where it is about 8 feet down. At one point 300 feet of sewer and brick pavement were destroyed and at another 275 feet. Cracks show in the pavement for about 4,000 feet, and manholes were blown about 200 feet along the sewer from points covering about $1\frac{3}{4}$ miles. The sewers were of cylinder two-ring brick construction. The brick of the pavement, the 6-inch concrete foundation and 18 inches of frozen ground came up together and was blown into pieces, some weighing 2 or 3 tons.

Sewer Survey Completed.

Columbus, O.—Columbus will outgrow its present sewerage system about 1930, according to Professor E. H. Eno, Ohio State University, who has just completed a



Courtesy, Detroit (Mich.) Free Press.
DETROIT PAVEMENT AFTER SEWER EXPLOSION.

two-year survey of the city's sewerage system for the department of public service. In 1930 he figures Columbus' population will be 313,800. He estimates the present population at 217,000, and figures it will grow to over half a million by 1950. In his report he recommends:

1—Elimination of the present catch basins, which he terms "expensive nuisances" and the substitution of sand catchers and automatic valves.

2—Prohibition of roof water being run off into sanitary sewers.

3—A closer system of inspection in the construction of sewers.

In his survey, Professor Eno and his assistants discovered much debris lodged in the sewers and found some of them caving in. In one were a number of shovels and in another more than a carload of beer bottles. Professor Eno estimates that the city would save thousands of dollars a year in maintenance of the sewage disposal plant if it had a separate system of sewers to carry storm water. The cost of building a separate storm sewer system now would be prohibitive, but it should be included in all future construction. When the Scioto River is two feet above normal water backs up into the intercepting sewer and has to be treated at the disposal plant. Automatic cut-offs, for which plans are submitted in the report, should be installed to prevent this frequent source of needless expense. The volume of sewage amounts to 20 per cent more than the entire output of the waterworks. In some sections much ground water enters the sewers because of poor construction. Professor Eno and his assistants traveled, it is calculated, about 25 miles through the sewers. Only once during the investigations was the party in danger, and that was when it encountered fumes from leaking gasoline.

\$150,000 for Mosquito War.

New York, N. Y.—The board of estimate has voted \$150,000 in special revenue bonds to be used immediately by health commissioner Haven Emerson in the work of exterminating mosquito breeding places in the marsh lands about Jamaica and Flushing bays in Brooklyn and Queens. The department will, for experimental purposes, breed the mosquitoes and glass jars with exhibits will be distributed to the public schools during the summer so that teachers may introduce object lessons on the mosquito in the nature study courses.

Another Jersey Pollution Suit.

Newark, N. J.—Riparian owners, who have figured in former pollution suits against the city of Paterson, with those in a third suit now awaiting decision, and a number of others possessing lands on the Passaic River, have caused a new chancery suit to be filed, challenging the right of both Newark and Jersey City, and the East Jersey Water Company, to divert water from that stream above Paterson. The suit is the result of conditions necessitating a delay of perhaps a year in the completion of the Passaic Valley sewer, which is intended to do away with the river pollution. Dumping of sewage in the river was to have ceased January 1 next year, but the legislature has extended the time. The bill challenges Paterson's right to discharge its sewage into the river, although that issue has already been passed upon in two pollution suits in which it was established that Paterson has no such right, damages being awarded to such riparian complaints as had shown their entitlement to awards, in lieu of a cessation of the nuisance, this being manifestly impracticable. The East Jersey company is called upon to state under what right it diverts water from the river or its tributaries and sells it, the quantity diverted and what contracts it has made to sell water from the river or its tributaries to the city of Paterson. Newark and Jersey City come in for a like catechizing. The bill sets out that the Passaic always has been a natural water course, and that the complainants' own houses, farms and buildings along the course of the stream, and by virtue of such ownership are subject only to the rights of the state so far as the stream may be navigable. It is claimed in behalf of the riparian owners that they are entitled to the

full and free flow of the river. The allegation is also made that the complainants are entitled to fishing and bathing rights in the stream, which have been made impossible because of the pollution of the river and diversion of its waters. Mention is also made of the point that one complainant was formerly the owner of ten ice houses along the river, but the ice business was destroyed by the stream's pollution.

WATER SUPPLY

New York Loses Step in Water Pollution Case.

New York, N. Y.—Both the senate and assembly at Albany have defeated motions made with a view to bringing out for debate on the floor the Wagner-Bloch bills providing for the removal of the Mohansic State Hospital for the Insane and the New York State Training School for Boys at Yorktown Heights from the Croton watershed. The city and a number of organizations are conducting a vigorous campaign in the defense of the water supply. The city was assured, however, that for a year at least the people of New York would be safe from the danger of water contaminated by sewage from the two institutions, as nothing would be done to place the institutions, which as yet have not been completed, in operation. Meanwhile the state is to employ experts to make further investigations. Corporation Counsel Lamar Hardy has announced that the city would press the injunction suit begun last November to restrain the managers of the New York State Training School from taking any further action looking to the award of any contract for the sewage disposal plant which would serve both the school and the Mohansic State Hospital on Mohansic Lake.

City Buys Water Plant.

Lawrence, Kans.—By a vote of almost two to one, Lawrence has decided to purchase the privately-owned water system, which for three years has been the center of attack by citizens interested in getting a better supply. Two years ago the proposition to buy the plant for \$197,000 was voted down, four to one. Last year a \$350,000 bond proposal to build a municipal plant was defeated, two to one. Now the offer of the Lawrence Water Company to sell its plant to the city for \$175,000 was accepted by a vote of 1,886 to 1,083. Plans for improving the plant will be made immediately. Softening and filtration apparatus will be installed and mains will be extended in the residence districts.

City Loses on Back Assessments.

Passaic, N. J.—A per curiam opinion filed by the supreme court at Trenton sets aside with costs the additional assessment against the Acquackanonk Water Company in Passaic for the year 1913. This opinion is the same as that in the case of Acquackanonk Township, whose assessment was also set aside. The action for lower water rates in Passaic in 1914, brought sworn statements from the water company as to the value of its properties in Passaic and the township, which were about the assessed valuations. As a result, the Passaic assessment for 1914 was more than doubled. It was found, however, when the matter came before the county board of taxation that some of the property was not within the city but in Acquackanonk Township. The county board remitted this much, but allowed the big general increase and the assessment for 1914 stood at about double what it was in 1913. A similar increase was ordered in Acquackanonk by the county board and neither was appealed by the company. Under the tax act of 1903 it was thought that both city and township had the right to ask the county board to go back one year and add the under assessment to the values for 1912, though the assessments for those years had already been levied and the taxes thereon were paid more than a year previous. The county board of taxation ordered these increases in the 1913 assessments, on petition of tax collector Arthur D. Bolton for Passaic and John H. Adamson for Acquackanonk. The Passaic assessment for 1913 was raised \$171,951. The township's assessment was increased from \$118,140 to \$249,776, an increase of \$131,636—more than

double. In these cases, as now ruled on by the supreme court, however, it is held that the municipalities did not possess the right they thought they had. The assessments were set aside purely on the ground that the 1906 statute was not complied with, this statute, in the court's opinion, expressly repealing the contrary provision of the act of 1903. It was only under the 1903 act that it was held to be possible to go back a year.

STREET LIGHTING AND POWER

City Wins in Free Municipal Light Case.

Pittsburgh, Pa.—The city has won an important suit that had been brought against it by the Philadelphia Company to secure payment for gas supplied the municipal hospital. The supreme court at Philadelphia reversed the verdict brought by an Allegheny court jury in favor of the company and gave judgment for the city. This means, according to city solicitor Charles A. O'Brien, that the city will be relieved of paying \$14,000. In 1911 the department of public safety made a contract with the company to supply gas to the hospital. No bids were advertised for. Every year since then the department of health, which was given jurisdiction over the hospital, awarded similar contracts without advertising for bids. Some years ago controller E. S. Morrow refused to pay the gas bills on the ground that under the contract by which George Westinghouse had obtained the franchise afterward acquired by the Philadelphia Company the company was bound to furnish gas free to the hospital, as well as to other city buildings. The Philadelphia Company finally sued for \$4,756, the cost of gas supplied in 1912, alleging that a subsequent ordinance repealed the Westinghouse ordinance and therefore the city was obliged to pay for the gas. In giving judgment for the city the supreme court disregards the city's claim and the company's, but decides for the city for the reason that before the contract was awarded to the company bids had not been advertised for, as required by the charter. Thus the city wins the case, but the question whether the company is bound to supply gas free is still to be threshed out in the courts. The opinion was handed down by Justice S. L. Mestrezat.

Asks for Reduced Rates.

Sacramento, Cal.—Alleging discrimination and excessive and unjustified charges for electricity for illumination purposes, city attorney Archibald Yell has asked the State railroad Commission to reduce rates in Sacramento. The action is the outcome of a bitter war between the city and the Pacific Gas and Electric and Great Western Power companies over the rates charged for electricity. In his request to the Railroad Commission, Yell alleges that seven cents per kilowatt hour is excessive. He is prepared to support this charge at the hearing with evidence of rates in other California cities where conditions for distribution are said not to be so favorable, and charges are lower. In alleging discrimination, Yell points out an unreasonable charge for illumination electricity as compared to commercial electricity. The fight between the city and the power companies started last year when the city held hearings to set rates for the ensuing year. Thousands of complaints of exorbitant charges and unjust actions on the part of the companies led the commission to adopt a sliding scale ranging from 7 cents per kilowatt hour, down to 5 cents. The power companies enjoined the city from enforcing this ordinance in the United States district court, and the city prepared to fight the case. In the meantime the state law permitting cities to have public utility rates fixed by the commission went into effect, and it was decided to ask the commission to fix local rates.

City Wins White Way Case.

Sandusky, O.—The city of Sandusky has been successful all the way in the white way controversy started a year ago when William Graefe sought to restrain the collection of assessments against his property. The state supreme court has sustained Common Pleas Judge Stephen M. Young and the court of appeals for Erie county by declining to review a motion directing the appellate court to

certify its records. The next step now appears to be the adoption of an assessing ordinance by the city commission to defray the cost of the white way installation and maintenance. Just prior to the dedication of the new lighting system April 30, 1915, Graefe obtained a temporary restraining order in common pleas court enjoining city and county officials from levying against his extensive property interests included within the white way district. When the case came up for hearing before Judge Young, of Norwalk, in August the court found against Graefe. Costs were assessed against the plaintiff. The matter was appealed by Graefe to the court of appeals, but the appellate judges affirmed the court of common pleas. The plans of the officials at the time the legislation for the white way was adopted called for an assessment of 50 cents per foot per year. This was proposed to be taxed against the property owner. While nothing has been certified to the county taxing officials it is presumed that under the ordinance yet to be enacted that the assessments will be carried against the property on the general tax duplicate.

New Lighting to Be Installed.

Sault Ste. Marie, Mich.—In accordance with the recent action on the part of the common council, sixty-six new ornamental lighting standards will be installed on the two chief business streets of the city in the near future, by the Edison Sault Electric Company. They will probably be set up at distances of 100 feet from each other, and will be placed directly opposite one another. The installation will consist of Novalux lighting standards, equipped with 400 candle power street lighting units. The cost to the city for the lights will be \$35 per year for each one that is lighted until midnight only. Probably about ten will burn all night. The standards have been ordered from the Mineralic Electric Company of Chicago, and the work of installation is to commence early in the spring.

Cost of Street Lighting.

Ogden, Utah.—The city board of commissioners have entered into a contract with the Utah Power and Light Company for municipal lights for the year 1916, which has been declared satisfactory to all parties. The cost of street arc lights was reduced from \$4.75 to \$4.50 each per month, and the Hudson Avenue lighting was reduced from about \$4.20 to \$3.85 for each light per month. The Hudson Avenue lights this year will be single-lamp units rather than five-lamp units and will make a saving of about \$250 over last year. Lamps that are supplied from overhead wiring will cost \$4.50 each a month and those supplied from underground wiring will cost \$4.75 a month. The city will have free lights for all municipal buildings and parks and also have the privilege of using 50,000 kilowatts during the year for other purposes. The contract also provides that the city shall be entitled to twenty-five arc lights for street purposes.

FIRE AND POLICE

\$5,000,000 Fire in Augusta.

Augusta, Ga.—Making a wide sweep, all night, through 25 city blocks a conflagration destroyed six to ten business blocks and more than 600 dwelling houses including many of Augusta's finest residences. About 3,000 persons were made homeless by the flames. Estimates of the damage range between \$5,000,000 and \$10,000,000. More than a hundred business houses were destroyed and also a number of the city's historic structures, including the St. Paul's Episcopal Church, about 135 years old. The fire started in the early evening in a store on the first floor of one of the city's principal office buildings and fanned by a strong wind ran its course despite the efforts of the city's whole fire department, which answered the first alarms. The "Chronicle" and "Herald" buildings were destroyed and the city's most important financial buildings. Two schools were destroyed. The famous "Cotton Row," storing over a \$1,000,000 worth of cotton, was wiped out. Although many were imperiled none lost their lives. Two firemen were seriously injured. In answer to a special appeal Columbia, S. C., sent two trucks and several thou-

sand feet of hose to help the local fire fighters and chief Behrens, of Charleston, sent an engine, hose and men on a special train. Chief William D. Cody, of Atlanta, sent two engines, 2,000 feet of hose and twelve men. Macon, Waynesboro and Savannah also sent apparatus and men. Militia patrolled the streets and there was no disorder.

Fires in Oklahoma.

Hobart, Okla.—Fire discovered in a cotton compress in early morning spread in spite of the efforts of the firemen through the plant of the Interstate Compress Company and two blocks of business buildings. Estimates of the damage range up to \$500,000. Railroad cars and large quantities of cotton were consumed.

Tulsa, Okla.—At least \$200,000 damage was caused by a prairie fire which swept over sections of land in the Cushing oil field. About forty oil tanks, sixty rigs and a number of buildings were burned.

Town's Business Section Destroyed.

Havana, Fla.—The entire business section of the thriving little town of Havana was practically destroyed by an early morning fire of unknown origin. Twenty-four business houses, nearly all brick, are in ashes. The loss is conservatively estimated at \$175,000.

Whole Department Fights Factory Fire.

Baltimore, Md.—Chief engineer August Emrich and deputy chief L. H. Burkhardt, led their entire department in fighting a fire in the plant of the F. X. Ganter Company, which manufactures store and office fixtures. The fire spread to other plants and warehouses and the loss totals \$300,000. A strong cold wind made the firemen's work difficult and froze the water on the sidewalks. Captain John V. Bortell of engine company 39, ladderman Charles Hughes and J. J. O'Dea and Charles Edwards were injured.

Midnight Hotel Fire in Knoxville.

Knoxville, Tenn.—A midnight fire which destroyed the Hotel Imperial and the Tripure Water Company's plant and damaged another hotel caused a loss of \$200,000. Although over 200 guests were asleep in the hotel when the fire broke out every one escaped without injury. Chief Sam B. Boyd had all his department, except the West Knoxville apparatus, at work. The fight lasted 36 hours and A. S. J. Birdsong, chief clerk of the water department, estimates that about 7,500,000 gallons of water were pumped into the burning building.

Firemen Save Business Section.

Haverhill, Mass.—Fire, which threatened the business section of the city on the Merrimack River, raged for three hours, but the work of the entire department confined the damage to about \$100,000. A blind man in one of the buildings gave the alarm and rescued a girl. Many other rescues of sleeping people were made by the firemen. Frank Harris, of hose company A, was the only fireman injured. Only the previous week 3,000 feet of new hose had been purchased and this proved of inestimable value in the fight. The firemen complained of the need of fireboat, as if they had been able to get access to the burning building from the river side their work would have been much more effective.

Ball of Yarn Starts \$1,500,000 Fire.

Nashville, Tenn.—A ball of yarn lighted and thrown by a boy into dry grass in a vacant lot, started a conflagration, which was not under control until after 35 residence blocks had been swept by the fire. The loss is estimated at \$1,500,000. A gale fanned the burning grass into flames, which attacked a negro's cabin and then a whole settlement of negroes. It quickly caught a planing mill and leaped from building to building until at least 600 residences had been destroyed, the East Nashville sub-post office burned, the big Warner public school and several churches reduced to ruins. At least 3,000 persons are homeless as a result of the conflagration. National guardsmen, called out by Gov. Rye, went on duty in the fire zone to remain there for several days to aid in relief work and to prevent looting. The Cumberland River separates the fire-swept section

from the Nashville business section. East Nashville, where the fire was, is largely a residence section and many of the homes are frame. The conflagration broke into two distinct blazes, one flowing east on Seventh street and the other down Fifth avenue. An area of thirty blocks was swept clean, which included many of the costliest residences of Nashville, several churches and one charitable institution. After paralleling each other on separate streets for many blocks the two fires again joined. The firemen worked desperately, but the gale rendered their efforts useless. Appeals for additional fire-fighting apparatus were sent to several nearby cities, but none could get here in time. Bucket brigades were formed and tons of water were thus thrown on buildings at important points in an effort to check or divert the fire. Relief measures were under way before the fire had been extinguished. A fund was started by voluntary donations and several thousand dollars was raised. Residences were thrown open to the homeless, commercial organizations remained open all night and churches turned their auditoriums into sleeping quarters. The state provided 500 tents and blankets. One negro was killed and a number of other persons injured, but not seriously.

Big Fires in Texas Cities.

Paris, Tex.—Ten thousand were rendered homeless, and between \$2,000,000 and \$5,000,000 property was destroyed as a result of a fire which swept thirty blocks of the city for six hours before it was under control. Between 1,500 and 2,000 homes were reduced to ashes and the city hall, newspaper offices, bank buildings, court house, federal building, the new \$100,000 post office, hotels, churches and business buildings were destroyed. The strong wind defeated all efforts of the firemen to check the flames and Mayor McCuiston called on Dallas, Sherman, Greenville and neighboring cities. Bonham, Tex., and Hugo, Okla., were the first to respond. Dallas sent an engine and twelve men with 900 feet of hose. The water service was crippled. The supply is drawn from a storage lake six miles west of the town and is pumped by electric power from the plant of the Texas Power and Light Company. The plant was burned and as the telephone lines were out of commission, the engineer at the lake could not be communicated with to start the emergency pumps. The central fire station was also burned. As far as is known, three people were killed. From all over Texas immediate relief was rushed and at night Paris was a tented city. The fire started near a cotton compress near the Santa Fe tracks.

McKinney, Tex.—Only the heroic work of fire chief John J. McKinney and the volunteer department saved the city from a great conflagration when the cotton compress, residences and freight cars were burned in the most disastrous fire in the city's history. The total loss was about \$200,000. The fire started from an oil stove explosion and a strong wind carried it to nearby buildings and then to the compress, fifteen blocks away. The transmission lines of the city light plant and the Independent Light and Power Company were put out of commission.

Fire Protection Duty of Cities.

Alameda, Cal.—In a decision rendered by the Railroad Commission at San Francisco in the case of the city of Alameda against the People's Water Company, the commission holds that in the absence of a contract with a water company municipalities in California are obliged to furnish pressure mains and other accessories for fire protection. The commission dismissed the complaint of Alameda against the People's Water Company, finding no jurisdiction. Alameda wanted the company to install mains and pipes for fire protection in districts newly built. The company refused, claiming it had no obligation to Alameda for fire protection, but only for domestic purposes. In order to save engineers' estimates, it was stipulated that the hearing be restricted to the presentation of legal questions bearing on the commission's jurisdiction. The city claimed the company, under its franchise, must furnish the fire protection demanded. This franchise was granted to R. R. Thompson in 1880 by Alameda and specified the furnishing by the company of fire plugs and hydrants. The

company replied that even if the Thompson franchise was assigned to it with other property that it was not bound by the early franchise, inasmuch as the company entered the city of Alameda under a constitutional franchise as a public water utility. The commission upheld the company's contention, and says that other cities in this state, as San Francisco and Oakland, have constructed their own mains for fire protection, and in its order cites the rule declared by the Supreme Court that in the absence of a contract the public utility was not liable for loss by fire.

MOTOR VEHICLES

City Garage Saves Money.

Atlanta, Ga.—The annual cost of each city auto, according to figures compiled by the purchasing agent, W. E. Chambers, is \$503. The figures show that in 1914, before opening the city garage, the average cost for each city machine was \$666 per year. This shows a saving of \$163 each year on each car for the city, according to the statement. These figures make no allowance for the saving on gasoline through the city contract. The city in its several departments owns and operates 63 machines and three new machines for the use of the fire department are to be purchased this year.

Volunteers Get New Truck.

Cranston, R. I.—The accompanying illustration shows the new fast automobile hose wagon recently added to the city's apparatus. It was bought after a short campaign of raising funds. The chassis is a commercial one and not that of a converted touring car.

Motorization for Syracuse.

Syracuse, N. Y.—Syracuse will have a completely motorized fire department within three years if schedules prepared by commissioner of public safety Walter W. Nicholson are maintained during that period. During 1916, according to the budget, \$31,100 will be paid for apparatus. Similar sums during 1917 and 1918 probably will affect the removal of all horse drawn vehicles and the substitution of the more satisfactory self-propelled equipment. Extreme satisfaction with the motorized department as it performed during the past year has caused the bureau of public safety to urge the rapid completion of the scheme. Up to the present \$44,500 has been spent for fifteen pieces of apparatus, including motor tractors for heavy pieces already in service. The \$32,100 asked for will purchase the following pieces, according to the requests made by department Chief Thomas F. Ryan: New four-wheel tractor for truck company No. 1 to replace present two-wheel tractor, which will be transferred to engine No. 8; four-wheel tractor for the water tower; combination wagon for company No. 5; pumping engine for company No. 2; new runabout for district chief. It is possible a new combination wagon will be purchased for company No. 8. Each of the four district chiefs is equipped with a runabout, but one machine—the first to enter the service—will be transferred to the signal plant department.



Courtesy, Providence (R. I.) Journal.
CRANSTON'S NEW FIRE TRUCK.

GOVERNMENT AND FINANCE

Cost of Hibbing's Financial Probe.

Hibbing, Minn.—The investigation by the public examiner's department of the financial affairs of the village of Hibbing and the town of Stuntz, of which the village is a part, is expected to cost both the municipality and the state a large sum. The investigation is still on, and the cost is already above the \$10,000 mark. J. C. Davis, an examiner employed by the department, returning from Hibbing, where he has been working since the first of last October, said that the work was by no means completed. Besides himself, two other examiners of the department are employed in going over the books. All three receive salaries ranging from \$2,100 to \$3,000, and in addition are paid their expenses. The village pays \$5 a day and expenses for each man employed, and the state contributes the balance. The investigation of the books of Hibbing was made at the request of a number of freeholders who petitioned Andrew Fritz, state public examiner, to make inquiries covering purchases, the cost of materials and possible extravagance.

New Jersey Finance Bills Passed.

Trenton, N. J.—In spite of vigorous opposition from the cities of Newark, Passaic, Paterson, Jersey City, Trenton and others in the state, seven of the nine Pierson Finance bills have been passed by the Senate and another by the House. The bills were prepared following an extensive investigation into the finances of the municipalities of the state and are designed to remedy conditions found. The New Jersey League of Municipalities has gone on record as being against the legislation. While some of the points are considered of merit the main opposition has developed against what is considered violation of the home rule principle now being sought by the cities. What are called arbitrary classifications and rulings are set up in the legislation. The bills passed by the Senate are:

No. 10—Amends the tax act and imposes a penalty on municipalities for not paying taxes to the county when due, the same as the taxpayers pay to local authorities when due.

No. 11—Provides for a true municipal and county budget and also provides for its proper publicity before final passage.

No. 12—Authorizes borrowing in anticipation of taxes and defines the instruments to be used and the time and manner for their payment.

No. 13—Defines the floating indebtedness and means of financing the same.

No. 14—Provides for a sinking fund commission and defines its duties.

No. 15—Directs the state comptroller to issue blanks upon which the statements of resources and expenditures distributed to the several heads and classifications shall be filed and published.

No. 16—Provides for a supervisor of municipal sinking funds.

Governor Fielder, however, vetoed all these with a message which said that in his opinion "insuperable difficulties would be encountered in carrying them into effect" and "future bond issues would be seriously impaired." The Governor passed the Assembly bill which limits the term of bonds issued to the life of the improvement and deals with the issuance and selling of bonds.

STREET CLEANING AND REFUSE DISPOSAL

Injunction Stops Trade Waste Removal.

New York, N. Y.—Street cleaning commissioner John T. Fetherston has been served with a supreme court injunction, which prevents him from dumping trade waste collected from buildings and stores upon the barges that now carry the city's refuse out to sea. The question of the removal of trade waste, which is designated as boxes, barrels, crates, and other similar rubbish, for years has been a serious problem with the street cleaning department. Many plans have been tried to dispose of it quickly in order to prevent its accumulation in cellars and storerooms, where it is likely to cause fires. Some months ago an order was issued by the department to collect everything and

anything that was placed on the curb for removal. An action was at once brought against the commissioner and the city by John D. Dailey and De Witt C. Ivins, who hold the contract for the removal of the city's ashes, street sweepings, and rubbish in scows, to restrain the city from dumping trade waste in their scows. They declared that their scows were being loaded by the city's dumpcarts with material and refuse not designated in their contract. The supreme court decision enjoins the street cleaning commissioner "from delivering, dumping, or depositing" upon the scows of the plaintiffs' material other than ashes, street sweepings, and rubbish. According to the decision:

Ashes shall be taken to mean and include steam ash, cinders, coal and wood ash, sawdust, floor sweepings, broken glass, broken crockery, oyster and clam shells, tin cans, and discarded paving and building material from the various city departments and bureaus.

Street sweepings shall be taken to mean the accumulations of dirt and litter collected from the pavements in the process of cleaning, the sweepings from the sidewalks and areas, and the materials removed from the sewer catch basins.

Rubbish shall be taken to mean the general household rubbish other than ashes and garbage, including bottles, paper, pasteboard, rags, mattresses, worn-out furniture, old clothes, old shoes leather and rubber scrap, carpets, tobacco stems, straw and excelsior, plants, shrubs, evergreens and grass.

Just what disposition is to be made of the trade waste now accumulating in the city is not known, but it is believed that private trucking concerns will have to be employed by individual store and building owners. A law was passed last year whereby the street cleaning commissioner can remove trade waste and charge a certain amount per load, this amount to be fixed by the Board of Estimate.

Newark's Garbage Troubles.

Newark, N. J.—The city is having great difficulty in effecting its clean-up in time for the beginning of its 250th anniversary celebration. Not only is the city in bad condition because of previous neglect, but the trouble is aggravated by the new scavenger contractor not being able to fulfill the conditions of the contract. Chief Engineer Morris R. Sherrerd reported that conditions in all parts of the city were intolerable and that refuse was accumulating beyond the power of the contractor. The Board of Works has therefore decided to fine the Newark Paving Company, the contractors, the sum of \$700 a day for failure to comply with the provisions of the contract. The city will also assist the company by sending out its own wagons and men to help in the clean-up. Hugh F. Gilligan, president of the company, lays his troubles to the weather, the impassable condition of the streets and to a strike, which drew away a large number of his men.

Making a Garbage Plant Profitable.

Schenectady, N. Y.—Commissioner of Public Works Otis E. Hunt intends to make the garbage plant a successful business proposition and he is already creating a demand for the tankage and grease of the plant. He has sold some carloads of tankage to farmers at \$6 a ton, and the number of requests are increasing. He has also sold 5,000 gallons of grease to a Pittsburgh firm for \$275—a rate of 5½ cents a gallon. Assistant Superintendent Turnbull of the garbage plant recently received a report from the State Agricultural College and laboratories at Cornell on an analysis of the tankage or residue of the plant. He is very much elated at the result, which shows that the tankage which he is selling at about \$6 a ton, is equally as good for fertilizer as prepared phosphate compounds, for which from \$25 to \$30 per ton is charged. The analysis also compares the value of the tankage as fertilizer with the ordinary manure. At the present time there is upwards of 100 tons of tankage in storage at the plant and the latter is so situated that it is readily accessible by horse and wagon. The spur track of the Delaware and Hudson also makes it possible for the city to ship the tankage in carload lots. The official analysis shows that this tankage contains 2.57 per cent. of nitrogen, against .8 per cent contained in manure, and the tankage also shows 6.21 per cent phosphates, against .6 per cent in manure. Mr. Turnbull announces that as soon as the present supply of 140 tons of tankage has been sold a new drier will be installed, reducing to a minimum the percentage of moisture still retained by the tankage. There are two driers in the plant

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Street Assessments—Squares—"Principal Streets."

Koop v. Henry Bickel Co.—In determining what constitutes a square for the purpose of assessing the cost of a street improvement upon one-half of its extent, the "principal streets" surrounding it are those which have been dedicated and accepted, and not those which are practical and convenient routes for travel.—Court of Appeals of Kentucky, 182 S. W. R., 617.

What Constitutes a "Street."

Home Laundry Co. et al. v. City of Louisville et al.—A "street" is a public way through a city, town or village, and ordinarily is a public way for footmen, persons upon horseback and in vehicles, and for the travel of vehicles necessary to be used in transporting commodities of traffic, and whatever may be used by the public for their pleasure or necessities, and ordinarily contemplates a carriageway and a footway, but a public way is nevertheless a street, though its use is confined to travel by pedestrians only.—Court of Appeals of Kentucky, 182 S. W. R., 645.

Taxation—Legislative Power—Amendment of Charter.

Stevens et al. v. Taylor, County Treasurer, et al.—Under a town charter (Sp. Laws 1893, p. 253, § 50, art. 1) providing that the common council might levy and collect taxes not to exceed one-half of 1 per cent, except as otherwise provided in the act, upon all real and personal property, an amendment by the common council "to levy, assess and collect taxes not to exceed (1) per cent except as otherwise provided and ect," was so indefinite as to be unenforceable without inserting after the words "except as otherwise provided," the clause, "in this charter," and further excluding the word and abbreviation "and ect"; and hence was too vague and doubtful to authorize a levy of taxes beyond the original charter limitation.—Supreme Court of Oregon, 154 P. R., 895.

Contract With Engineer—Construction.

Williamson v. City of New York.—Under a contract between a president of a municipal corporation and a consulting engineer, providing for the furnishing by the engineer of plans and estimated cost of a public improvement and his supervision of the proposed work, and allowing him as compensation therefor a percentage of the cost, one half payable upon the approval of the plans by the president, and the other half upon estimates by the contractors, certified by the engineer as the work progressed, in the absence of a power in the president to contract also for the construction of the improvement, the corporation need not proceed with the work after the adoption of the plans, and the engineer's right to demand the balance of the compensation provided for does not accrue until after the improvement is commenced.—Supreme Court, Appellate Division, First Department. 157 N. Y. S., 336.

Indebtedness of City—Amount.

Lepley v. City of Fort Benton et al.—Const. art. 13, § 6, declares that no city, township, or school district shall become indebted in an amount exceeding 3 per cent of the value of its taxable property, but that municipalities may, on vote of the taxpayers, incur increased indebtedness when necessary to construct a sewer system or procure a water supply. Rev. Codes, § 3259, subd. 64, which enacts the

at the present time, but these are insufficient to completely remove the moisture. The additional drier will increase the value of tankage and shortly defray the cost of the additional equipment. To further popularize the tankage, Mr. Turnbull will ultimately bag the product in 100-pound lots. This will be desirable to those who have small garden plots or those who wish to experiment with the tankage before buying in larger quantities.

constitutional provision in statutory form, authorizes the incurring of indebtedness not exceeding 10 per cent, above the 3 per cent limit for the construction of a sewer or water system. A municipality, which was not then indebted up to the 3 per cent limit, being desirous of constructing a sewer system, was authorized by a vote of the electors to incur an indebtedness beyond the 3 per cent limit. Held, that the Constitution and statutes only authorize a city to incur indebtedness beyond the 3 per cent limit when such indebtedness is necessary for the construction of a sewer or waterworks system; therefore, as the city was not, at the time of the election, indebted up to the 3 per cent limit, only the amount of indebtedness for the construction of the sewer system which exceeded the 3 per cent limit was authorized, and the city could not, before issuing bonds for such system, incur other indebtedness up to the 3 per cent limit.—Supreme Court of Montana, 154 P. R., 710.

Defect in Sidewalk—Liability—Notice.

Green v. City of Reedsburg.—Where plaintiff was injured by tripping over a broken guy wire on a sidewalk, which wire had been attached to an electric light pole used by defendant city in the operation of a commercial electric plant and was not broken fifteen minutes before the accident, the defect in the sidewalk caused by the wire had not existed long enough to charge the city with notice thereof to render it liable.—Supreme Court of Wisconsin, 155 N. W. R., 938.

Charter—Constitutional Provisions—Election.

Cunningham v. Rockwood.—St. 1915, c. 267, establishing four different types of city charter, with provisions by which cities might select for themselves the form which its voters decided to be best adapted to its needs, in place of enacting a special act whenever a city's government was to be changed, did not violate Const. Amend. art 2, giving the general court full power to constitute city governments in any corporate town and to grant to its inhabitants such powers as the general court might deem necessary for its government, as such provision does not apply after the change from town to city has once been made.—Supreme Judicial Court of Massachusetts, Suffolk, 111 N. E. R., 409.

Conflicting Provisions of Law—Construction.

Board of Education of Ellsworth Dist. v. Tyler County Court.—Ordinarily where there is a conflict between two parts of a single act the one latest in position will be declared to be the law, as being the latest expression of the legislative will, and this rule is applicable to conflicting sections in the revision of a statute. And where two distinct statutes stand in pari materia, and sections thereof are in irreconcilable conflict, that section must prevail which can properly be considered as the last expression of the law making power, this without regard to the relative position of such sections in the Code.—Supreme Court of Appeals of West Virginia, 87 S. E. R., 870.

Improvements—Contracts—Sewer Commission—Powers.

Herdman, Town Treasurer v. State ex rel. Jacobs.—Where a contract of a sewer commission of a town for the construction of a sewer provided that the commission might deduct a penalty for each day elapsing after the date named for the completion of the contract, it was within the discretion of the commission to make the deduction or not; and where the commission certified the amount due the contractor without deducting such penalty, neither the town treasurer nor the town engineer had a right to say whether the amount should be deducted.—Supreme Court of Delaware, 96 A. R., 199.

Regulation of Jitneys or Motor Buses.

Auto Transit Co. et. al. v. City of Ft. Worth, et. al.—An ordinance regulating the operation of jitneys or motor buses, and requiring as a condition to the granting of a license for the operation of any such vehicle the execution of a bond conditioned for the payment of damages for injuries or death caused by the operation thereof, was not discriminatory or invalid, though there was no similar requirement as to the operation of taxicabs or rent cars, or individuals operating their own cars, not for hire, as the

operation of jitneys on crowded streets is a business peculiarly dangerous to the public, and the duty of care on the part of operators is more important than the performance of such duty in the case of one only occasionally or infrequently driving over such streets, and the danger therefrom is more imminent and frequent, and a city, in the exercise of its police power, may properly require a further guaranty than it does of others that operators of such vehicles will avoid acts of negligence and respond for any damage inflicted.—Court of Civil Appeals of Texas, Ft. Worth. 182 S. W. R., 685.

Public Improvements—Lien.

Halvorsen v. Mullin, et al.—Under Code Supp. 1913, Sec. 816, assessments for street improvements become a first lien upon the property only when the city clerk has filed with the county auditor a written or printed copy of the notice of the resolution provided for, with a true copy of the proof of publication thereof, together with the certificate of the clerk that an ordinance has been adopted directing the making or reconstruction of such improvements.—Supreme Court of Iowa, 156 N. W. R., 289.

Parks—Public Use—Deed of Gift.

Bailey v. City of Topeka et al.—The action of a city in granting to individuals, for pay, exclusive rights within a public park to operate refreshment and lunch stands, and to rent boats and bathing suits and towels and dressing rooms, does not constitute a use of the park for other than public purposes, nor is it in conflict with provisions of the deed of gift by which the city acquired the property, to the effect that it should be used for the benefit of the public, and should be inalienable by deed, gift, lease, or other method.—Supreme Court of Kansas, 154 P. R., 1014.

Contractor's Bond—Materialmen—Right to Recover.

Mack Mfg. Co. v. Massachusetts Bonding & Ins. Co. et al.—Although authority of an agent to execute an instrument under seal, in the absence of the principal, must, in all instances, be itself under seal, where a paving contractor for a city executed a bond to secure such city, it being within the contemplation of the parties that the bond should also secure materialmen for the work, such bond was efficacious to give a materialman a right of action against the bonding company thereon, although the city had no sealed authority from the materialman to execute an instrument under seal, since the relationship between the materialman and the bonding company was not dependent upon whether the city was the agent for the materialman when the bond was executed.—Supreme Court of South Carolina, 87 S. E. R., 439.

Annexation—Election—"District Proposed to Be Annexed."

Cook v. Board of County Canvassers for Kent County.—Under Act No. 279, Pub. Acts 1909, § 9, providing that the district to be affected by a proposed incorporation or change of boundaries shall be the whole of each township, city, etc., from which territory is to be taken, or to which it is to be annexed, providing that the proposed consolidation shall be submitted to qualified electors of the city and of the township from which the territory is to be taken, and that at the election on such consolidations the votes of the qualified electors in the territory proposed to be annexed shall be kept separate from those in the remaining part of such township, etc., and that, if the returns show a majority of the votes cast in the district proposed to be annexed, voting separately, to be in favor of the proposed change, and if a majority of the electors in the remainder of the district to be affected, voting collectively, are in favor of such proposed change, such territory shall become a part of the city, etc., the term "district proposed to be annexed" means that part of each township to be annexed, and the requirement of a majority vote therein means that the part of each township to be annexed must vote affirmatively for annexation, so that, where the voters in the part of a township proposed to be annexed voted against annexation, though the vote in the voting district was in favor thereof, such part of the township would not be annexed.—Supreme Court of Michigan, 155 N. W. R., 1033.

NEWS OF THE SOCIETIES

Calendar of Meetings.

April 8.—AMERICAN WATER WORKS ASSOCIATION (Four-State Section), Atlantic City, N. J.

April 10-22.—NATIONAL CONFERENCE ON COMMUNITY CENTERS AND RELATED PROBLEMS. First conference, New York City. Secretary, John Collier, 70 Fifth Ave., New York.

May 2, 3.—PENNSYLVANIA STATE CHIEFS OF POLICE. Annual convention, Park Hotel, Williamsport, Pa. Secretary, George W. Harder, Williamsport, Pa.

May 8-10.—SOUTHWESTERN WATER WORKS ASSOCIATION. Annual convention, Waco, Tex. Secretary, E. L. Fulkerson, Waco, Tex.

May 10-17.—NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS.—Annual conference, Indianapolis, Ind.

May 31-June 2.—NEW YORK STATE CONFERENCE OF MAYORS. Annual conference, Syracuse, N. Y.

May 31-June 2.—NATIONAL ASSOCIATION OF COMPTROLLERS AND ACCOUNTING OFFICERS. Annual convention, Syracuse, N. Y.

June 4-8.—AMERICAN WATER WORKS ASSOCIATION. Thirty-sixth annual convention, New York, N. Y. Secretary, J. M. Diven, 47 State Street, Troy, N. Y.

June 5-9.—AMERICAN WATER WORKS ASSOCIATION. Thirty-sixth annual convention, Hotel Astor, New York City. Secretary, J. M. Diven, 47 State Street, Troy, N. Y.

June 15, 16.—OHIO SOCIETY OF MECHANICAL, STEAM AND ELECTRICAL ENGINEERS. Convention, Cleveland, O. President, Joseph L. Skeldon, Toledo.

June 28-30.—MICHIGAN LEAGUE OF MUNICIPALITIES. Annual meeting, Battle Creek, Mich.

July 11-13.—MUNICIPAL LEAGUE OF INDIANA. Annual meeting, Goshen, Ind.

Aug. 7-9.—CITY MARSHALS' AND POLICE CHIEFS' UNION OF TEXAS. Annual convention, Houston, Tex.

Aug. 8-11.—DOMINION ASSOCIATION OF FIRE CHIEFS. Annual convention, Windsor, Ont. Secretary, James Armstrong, Kingston, Ont.

Aug. 20-Sept. 1.—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Annual convention, Providence, R. I. Secretary, James McFall, Roanoke, Va.

Sept. 6-9.—LEAGUE OF AMERICAN MUNICIPALITIES. Annual convention, Newark, N. J.

Oct. 9-13.—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Twenty-third Annual Convention, Robert Treat Hotel, Newark, N. J. Secretary, Charles Carroll Brown, 702 Wulsin Building, Indianapolis, Ind.

Oct. 10-21.—NATIONAL SAFETY COUNCIL. Fifth Annual Safety Congress, Detroit, Mich. Secretary, W. H. Cameron, Continental and Commercial Bank, Chicago, Ill.

International Association of Fire Engineers.

The forty-fourth annual meeting of the International Association of Fire Engineers will be held at Providence, R. I., August 29 to September 1, 1916.

Among the topics to be discussed will be: The Utility of the Triple Combination Pump, Hose Wagon and Chemical, by Chiefs J. C. Moran of Hartford, A. H. Fiske of Framingham, and H. W. Parker, of Stamford; The Fire Department Under a Commission Manager Form of Government, by C. E. Ashburner, City Manager, Springfield, O.; Does the Menace of the Wood Shingles Justify Its Abolition?, by Chief T. W. Haney, Jacksonville, Fla.; Self-Contained Oxygen Breathing Mine Rescue and Fire Fighting Apparatus, by Edward Steidle of the Bureau of Mines.

A special session will be devoted to

"Round Table" discussion in which there will be no set subjects or papers. The question box will be opened and the questions informally discussed. James McFall, of Roanoke, Va., is secretary. C. W. Greenfield, Kearney, N. J., is chairman of the exhibit committee.

American Waterworks Association.

The 36th annual convention will be held in New York City, June 5 to 9, 1916, with headquarters at the Hotel Astor, Broadway, 44th to 45th streets—Times Square. Overflow accommodations have been arranged for at the Woodstock, 43d street, east of Broadway, a short block from the Astor. Members should communicate directly with the hotels for reservations.

Thursday will again be set aside as Superintendents' Day, and devoted to short practical papers by water works superintendents; answering questions and discussing every-day water works problems, and a heart to heart talk with actual water works managers.

The sections of the association have started a membership contest. To stimulate the interest in this contest, a cup has been offered to the section making the largest per cent gain from March first to the date of the convention, June 5.

A gold association badge will be given to the member of any section reporting the largest number of members obtained in the section in the same time, through his individual effort.

Safety Congress.

The fifth annual Safety Congress, to be conducted by the National Safety Council, will be held in Detroit, Mich., on Oct. 16 to 21. W. H. Cameron, Continental and Commercial Bank Building, Chicago, is secretary of the council.

Dominion Association of Fire Chiefs.

At a meeting of the Board of Directors of the association held at Windsor, Ont., March 16, the date for the coming convention was set for August 8-11, at Windsor.

The program arranged includes an address on fire prevention by a well-known member of the N. F. P. A., an address on building construction of hospitals and other public buildings, an address on standardization by a member of the Dominion Commission on Conservation; also an illustrated address on town planning and fire protection by a member of the same body. As soon as their consent is received the name of the above gentlemen will be made public. A demonstration will be arranged to be given by a chemist of the city of Windsor, as to causes of spontaneous combustion, to be followed by an address from Chief Graham on incendiary fires, their cause, intentional and otherwise.

The work, duties and responsibilities of the Fire Marshal's office will be spoken of by E. P. Henton, the recently appointed Fire Marshal for Ontario, and by a fire commissioner from another Province. Mr. Henton's consent has already been secured.

A two-story frame building will be erected near the exhibit hall and fitted with the May Oatway Automatic Fire Alarm Signal System, and also the sprinkler system and this will be set on fire and a practical demonstration of these systems given to the chiefs and to the public.

It was also decided that for this year at least the annual book of proceedings of the convention will be issued by the officers, instead of as in the past by a publishing company, and the society was instructed to proceed at once with this work.

It was also decided to apply for membership in the N. F. P. A. Arrangements have been made for the entry in bond of all exhibits from the states, and Mr. Smith, collector of customs, assured all that he would personally see that every facility would be given in this matter. Intending exhibitors should communicate at once with Chief James Corbett, Massey-Harris Co., Toronto, Ontario, regarding space and all particulars regarding same. There is no fee for floor space.

National Conference of Charities and Corrections.

The national conference of charities and corrections is to be held in Indianapolis, May 10-17. The Rev. Francis H. Gavisk, of St. John's church, is president of the conference, having been elected at the Baltimore meeting last year.

In the health department of the conference appear the names of Dr. C. S. Woods, superintendent of the Methodist hospital, who is to speak on "Venereal Diseases in Their Relation to Public and Individual Health," and Dr. Fred Henshaw, dean of the Indiana Dental college, is to speak in the symposium on "Oral Hygiene in Its Relation to Public and Individual Health." In the discussion on "Disease, Ill Health and Sickness and Their Bearing on Crime, Poverty and Insanity," the name of Dr. D. C. Peyton, superintendent of the Indiana reformatory at Jeffersonville, and of Dr. S. E. Smith, of the Eastern Hospital for the Insane, at Richmond, appear. The theme of the discussion in this section will be prevention of disease.

The opening statement for the session will be made by Dr. Hurty, as chairman. Other names that will appear on this program are those of Dr. Juan B. Guiteras, director of the National hospital and professor of medicine, National university, Havana, Cuba; Dr. Theodore B. Sachs, of the municipal tuberculosis sanatorium, Chicago; Dr. Eugene L. Fisk, director of hygiene, New York city; E. R. Hayhurst, state board of health, Columbus, Ohio, and Dr. C. L. Reed, director of

the University of Cincinnati medical department.

In the department of children the discussion will be given over entirely to a solution of the public school relation to child welfare programs and agencies. It will be in the charge of Miss Julia C. Lathrop, of Washington, D. C., chief of the federal children's bureau. It will be the first time that this department has ever devoted its time entirely to one aspect of its work.

The subjects for discussion under this head include "How Can Social Agencies Promote the Effectiveness of Public Schools?", "The Public School and Public Health," "The School Center in Country and City," "School Supervision Beyond School Walls," "Children's Agencies and the Public Schools." A sectional meeting will be given over entirely to "The Gary Plan and Its Social Bearings," with William Wirt, superintendent of the Gary (Ind.) schools leading. This section will cover other subjects, such as mothers' pensions, the juvenile court and its services, the work of the probation officer and physical training in schools.

The department of corrections will be under the direction of Katherine Bement Davis, chairman of the parole commission, New York City, and Harry Olson, chief justice of the municipal court, Chicago. The department will consider the effects of prison life on character, the psychopathic basis of crime, policemen and policewomen as adjuncts of the modern, scientific treatment of crime, and the growing movement to establish farm colonies for petty criminals on short sentences. George A. Shideler of Marion, is one of the speakers in this division. W. H. Whittaker, formerly superintendent at Jeffersonville, now superintendent of the District of Columbia workhouse, Occoquan, Va., also is on the program. Charles Carroll Brown, of Indianapolis, will speak on the police as a social force.

The leading subject under the family and community department is "Conditions Adverse to Efficient Public Work Under Democratic Government." The speaker has not been chosen, but he is to be a national leader. Other subjects that will command the attention of this division are health insurance, the influence of life insurance on poverty and dependency, the co-ordination of civic effort in small communities, medical facts that social workers should know, a subject that will be treated by Dr. C. P. Emerson, dean of the Indiana university school of medicine, and record keeping.

E. R. Johnstone, superintendent of the training school, Vineland, N. J., is chairman of the feeble-mindedness and insanity department, and George S. Bliss, superintendent of the school for feeble-minded youths, at Ft. Wayne, Ind., is vice chairman. The purpose of this department is to formulate and present the latest knowledge on this subject, and to provide additional mo-

tive in Indiana for the adoption of new policing and methods. A state committee is at work on this subject, appointed by Governor Ralston, and the workers at the conference for this department will work with that committee.

(Continued on page 452.)

PERSONALS

Goodbody, Richard J., has been appointed superintendent of streets of San Diego, Cal.

Crum, Frederick S., commissioner of health, Newark, N. J., has resigned.

Townley, J. C., has been appointed city superintendent of Ithaca, N. Y.

Collins, John L., consulting engineer, 30 Church street, New York, has been retained by the Borough of Sussex, N. J., to prepare plans and supervise the construction of a sewerage system and sewage disposal works.

Scanlon, R. H., is employed in the capacity of city manager by the Powell River Company, Limited, at Powell River, British Columbia.

Allen, James, who has been chief engineer of the Washington State Highway Department since December 10, 1913, has been appointed highway commissioner by Governor Lister to succeed W. R. Roy, of Spokane, who resigned last week on account of ill health. Mr. Allen will take up his duties at once.

Upon receiving his appointment as highway commissioner, Mr. Allen announced the appointment of George F. Cotterill, of Seattle, as chief engineer of the highway department, the position Allen held. Cotterill, who was former mayor of Seattle, member of the state senate and a candidate at the last election for United States senator, had been prominently mentioned for commissioner. Cotterill is an engineer by profession and was connected with railroad building in Washington. He was at one time principal assistant to Engineer R. H. Thomson, of Seattle.

Both appointments took effect March 20.

Commissioner Allen has been identified with railroad and highway work for a long time, and comes to his new office with a great deal of experience. For many years he worked under the late W. P. Watson, a widely known engineer of the Northwest and Central states.

Mr. Allen is 45 years of age. He was born in Lexington, Ky., in 1871, coming to Olympia in 1888. For a number of years he was locating and constructing engineer for the Northern Pacific and O-W. in Washington, Oregon and Idaho. Later he went to Arizona, where he was connected with the construction of the El Paso & Southern. In 1900 he was in Utah as an engineer for the Oregon Short Line, and, following this, was with the Missouri

Pacific in Arkansas, being closely associated with Mr. Watson. After eight years in Arkansas, Allen went into Montana for the Milwaukee, and when the highway commission was established in Washington he became locating engineer for the first commissioner, Joseph Snow, remaining until the appointment of Henry Bowlby.

The appointment has been announced at the Pennsylvania State Highway Department of H. A. Thomson, of Phoenixville, as engineer of the newly created District Number 1, in the Bureau of Township Highways. Mr. Thomson has been attached to the State Highway Department forces in District Number 7, with headquarters at Philadelphia.

The Senate of the State of New York on March 16 confirmed the nominations made by Governor Whitman of Travis H. Whitney and Charles S. Hervey, both of Brooklyn, to be members of the Public Service Commission for the First District. Mr. Whitney succeeds Commissioner J. Sergeant Cram, whose term expired January 31, 1916. His term of office, therefore, will expire January 31, 1921. Mr. Hervey succeeds Commissioner George V. S. Williams, who resigned in January. Mr. Hervey's term will expire January 31, 1917. Commissioners Whitney and Hervey were sworn in at Albany on March 17, and both immediately entered upon their new duties. With their accession the full membership of the commission for the First District again became complete. It is now an entirely new commission, the oldest member, in point of service, being Col. William Hayward, who took office April 1, 1915. The new Chairman, Oscar S. Straus, was appointed in December, 1915, and Commissioner Henry W. Hodge in January, 1916.

G. Herman Gamper, M.E., E.E., and C. O. Doughaday, C.E., M.E., have opened an office as the Power Engineering Company at 421 New First National Bank Building, Columbus, O. The firm is doing a general electrical and mechanical engineering business in designing and constructing electric light, heat and power, water pumping, filtration and sewage disposal plants and also ornamental street lighting. The work of the firm will include the preparation of contested rate cases for presentation to the Public Utilities Commission of Ohio and those of other states. The members of the firm have had long experience in building and operating electrical plants. Mr. Gamper has been chosen by Director of Public Service Borden of Columbus to plan and supervise the extension of the city plant for commercial and residence lighting. As superintendent of the plant from 1908-1911 Mr. Gamper made a record in trebling its capacity and equipping it for commercial purposes. Mr. Gamper is a graduate of Ohio State University.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

CONCRETE SIGNS.

Artistic Types Made of Cement and Granite.

One of the side results of the good roads movement and the increased automobile traffic has been the increased use of highway signs. Not only do the travellers want to know where they are going but the communities want to tell them to come back, and many municipalities are realizing the possibilities of advertising themselves in signs. This has caused the development of the permanent concrete sign to replace the old useless wooden signs, and concrete is becoming very popular for this purpose. The material lends itself to a great variety of really artistic designs not available with wood.

National reinforced concrete lettered signs and posts are made from white stainless Portland cement and crushed granite. It is carefully molded and presents a smooth, white surface claimed to be unstainable and permanently unaffected by weather. The letters are of monolithic construction molded in a plastic state and dove-tailed with the remainder of the material. The signs and posts have been tested under every kind of weather conditions.

The illustrations on the next page indicate some of the designs possible with the National method of concrete construction. One shows an ornamental Lincoln Highway marker placed in Pittsburgh last year after a number of designs were submitted. The post is about nine feet high and is about five inches square for the lower seven feet. On the front of the post is a bust of Lincoln and the words "Lincoln Highway." Another illustration shows a road sign. The number of "boards" may be increased to five or six, making the sign very comprehensive. The National construction, of course, is not restricted to signs and posts, and the other illustration shows its use in an ornamental concrete boulevard standard holding three light globes. Similar designs may be used, for instance, for speed limit signs and safety island lighting.

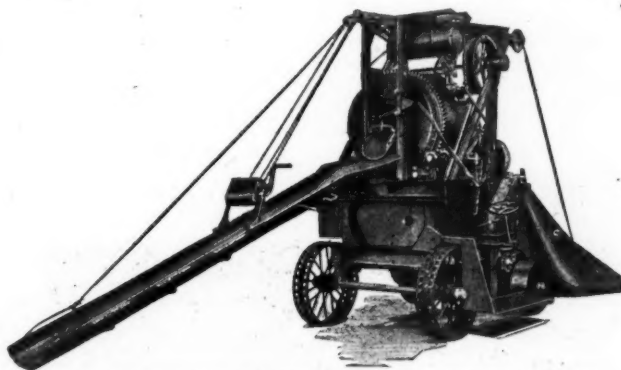
These products are made by the National Concrete Sign and Post Company, Inc., Oil City, Pa.

NEW KOEHRING MIXERS.

"Dandie" Line of Low-Priced, Standardized Machines.

The Koehring Machine Company, Milwaukee, Wis., displayed at the recent Chicago show two new mixers which it will build on the "Ford plan," novel in the manufacture of concrete mixers: fast production of strictly standardized machines in big volume to make a low price possible. The mixers are named the "Dandie" line, consisting of construction type mixers in 5 and 10 cubic feet capacities and a high drum end loading paver built in 10 and 20 cubic feet capacities.

The Dandie construction type mixer is a low-down machine with platform for wheelbarrow charging, and may



NEW KOEHRING DANDIE PAVING MIXER WITH HIGH DRUM.

also be equipped with batch hopper and power loading skip. The mixing action is the same as in the regular Koehring machines, with the discharge spout extending inside the drum, and in the mixing position taking part in the mixing action. This chute is reversed to discharge. The trucks are extra strong and the tires especially wide. All bearings are on the universal principle. Double drum gears are cast from special composition metal. The power loading skip has automatic knock-out and brake, automatically stopping skip in charging position and holding until released. The Koehring three-way valve automatic water measuring tank may also be had on these mixers.

The height of drum in the Dandie pavers affords an unusually great spouting range and makes possible the steep angle that causes a fast flow of concrete. The loading skip accommodates two wheelers at the same time and is provided with automatic knock-out and lock. The spout is self-compensating, maintaining the point of discharge at the same distance from

the ground, regardless of the number of sections in use.

Power for the Dandie line is from gasoline engine or steam boiler and engine. The power plants are securely housed in every type.

The Koehring Machine Company, Milwaukee, Wis., is distributing special literature on the Dandie line, booklet E-29, on the low-charging mixer and booklet F-29 on the Dandie paver.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago.—Awards of municipal contracts include 4,300 tons at Cleveland to the leading interest; 1,200 tons at Jackson, Mich., to James B. Clow & Son, and 1,000 tons at Salt Lake City through a contractor to the American Cast Iron Pipe Company. New business is limited to small tonnages. Quotations: 4-inch, \$32.50 to \$33; 6-inch and larger, \$29.50 to \$30; class A, \$1 extra. Birmingham—Conditions in the water and gas market continue satisfactory. Orders from South America continue coming in quite regularly after the trip of J. R. McWane of the American Cast Iron Pipe Company. No immediate plant improvements are contemplated in the proposition of the National Cast Iron Pipe Company to increase its capital stock from \$200,000 to \$350,000. Sanitary shops are not yet on full time. Quotations: 4-inch, \$28; 6-inch and up, \$25; special lengths, \$1 extra. One interest, the smallest, quotes \$27 and \$24. New York—The City of Cambridge, Mass., opened bids March 25 on 400 tons of 4 to 6-inch, and Boston on March 27 on 140 tons of 8 and 12-inch. The Standard Cast Iron Pipe & Foundry Company was low bidder, at \$29.98 per net ton, on 1,230 tons of 4 to 20-inch pipe to be delivered at Brooklyn for the Department of Water Supply, Gas and Electricity of New York City. A great deal of private buying is in progress. Quotations: 6-inch, class B and heavier, \$24.50; class A, \$30.50.

Lead.—Lead is in big demand with independents taking the business at premium prices. Quotations: New York, 8 cents; St. Louis, 8 cents.

The Gramm-Bernstein Company, Lima, Ohio, is reported to have taken an order from Birmingham, England, for between 300 and 400 motor trucks. These are wanted for commercial purposes rather than for war use.

Automobile Production in 1914.— Nearly half a billion dollars' worth of automobiles were produced during 1914, the year covered by the quinquennial census of manufacturers now being compiled. This large total was three and a half times the value of the product of this industry as returned by the census of 1909.

The official statistics show that during 1914 there were in the United States 338 establishments manufacturing complete automobiles, their output being 573,114 machines, valued at \$465,042,474. Thirty-eight of these establishments were engaged primarily in the manufacture of bodies and parts, agricultural implements, and other products, and reported the manufacture of complete automobiles as a subsidiary product. In addition there were 12 establishments which manufactured 20 cars, either for experimental purposes or for their own use, upon which no market value could be placed.

At the 1909 census 315 establishments were reported as engaged in the manufacture of automobiles either as a primary or as a subsidiary product; and their output was 127,287 machines, valued at \$165,099,404. During the five years 1909-1914 there has thus been an increase of 350.3 per cent in the number of automobiles manufactured, and 181.7 per cent in their total value. The fact that the increase in value of output during the five years was relatively much smaller than the increase in number of machines made is accounted for not only by a general reduction in prices, but also by the production of a larger proportion of machines of low-priced makes in the later year as compared with the earlier.

Of the total number of automobiles manufactured in 1914, those operated by gasoline or steam power numbered 568,399, and those operated by electric power, 4,715, as compared with 123,452 operated by gasoline or steam, and 3,835 by electric power, manufactured in 1909. The increase during the five years in the number of gasoline and steam machines manufactured was thus 360.4 per cent, and in the number of electrics, 22.9 per cent.

Touring cars formed the principal type manufactured in both census years. In 1914 the output of this class of machines was 454,876, valued at \$351,585,518, compared with 76,189, valued at \$113,510,575, in 1909. Of the total production for 1914 the number designed for pleasure or family use was 554,255, compared with 119,190 in 1909. For business purposes and for use as public cabs, omnibuses, ambulances, patrol wagons, fire-fighting machines, and for other business purposes, 24,144 machines were manufactured in 1914, compared with 4,262 in 1909. The output of delivery wagons and trucks was 22,753 in 1914, compared with 2,771 in 1909.

The report also classifies the gasoline and steam automobiles manufactured in 1914 according to their horsepower. The production of vehicles of

less than 10 hp. amounted to only 391; of from 10 to 19 hp., to 45,116; of from 20 to 29 hp. to 346,399; of from 30 to 49 hp., to 163,468; and of 50 hp. or more, to 13,025. The following is a comparative summary of the number of automobiles manufactured, as reported for 1914 and 1909:

	1914.	1909.	Per Cent of Increase, 1909-1914.
Total	573,114	127,287	350.3
Gasoline and steam*.	568,399	123,452	360.4
Family and pleasure	544,255	119,190	356.6
Touring cars.....	454,876	76,189	497.0
Delivery wagons and trucks	22,753	2,771	721.1
All other	1,391	1,491	16.7
Electric	4,715	3,835	22.9

*Returns were received from only two establishments making steam automobiles in 1914. The statistics for these companies are consolidated with those manufacturing gasoline automobiles in order to avoid the disclosure of their operations.

†Decrease.

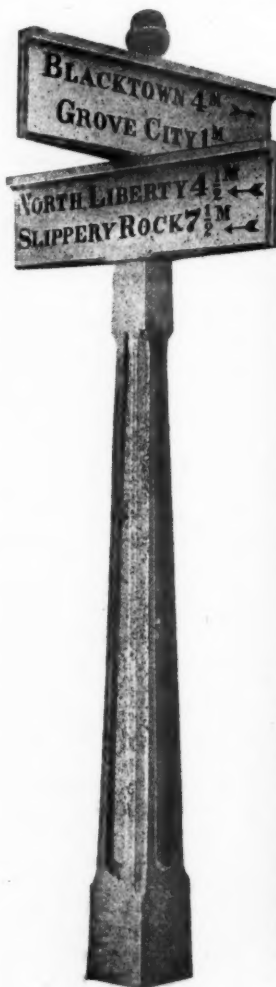
The figures given in this report do not represent the number of establishments nor the value of products of the entire automobile industry, but only the figures for establishments making complete automobiles. In addition to these establishments, a large number are engaged in the manufacture of automobile parts and accessories. The value of automobile tires made by establishments in the rubber industry is very large, and many of these tires as well as other parts and accessories are

sold to repair shops and automobile owners, and therefore do not appear in the value of products of the automobile industry.

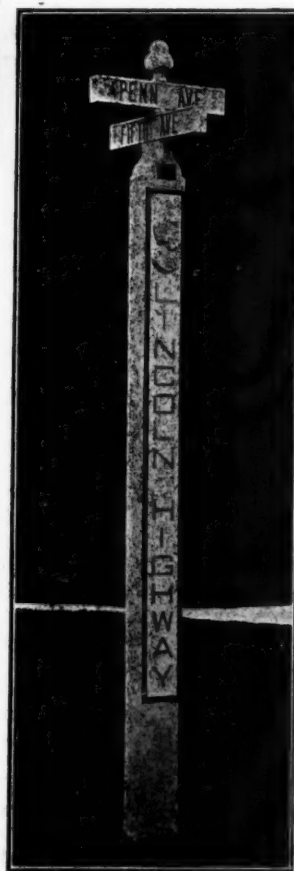
The Concrete Dope Book, just issued by **The Cement Tile Machinery Company**, Waterloo, Ia., combines in an interesting way alternate pages of catalog and reference book. The various models of the "Winner" concrete mixers are described and illustrated. The "dope" is of very practical and useful value to anybody handling concrete and includes such tabulated information as "Materials for 100 sq. ft. of Cement Sidewalk," "Actual Cost of Sidewalks," "Materials Required for One Cu. Yd. of Concrete," "Little Helps in Estimating," "Cost of Handling Materials," and "Concrete Pavement Calculations." The contractors' tips are also good to know.

The Badger Meter Manufacturing Company, Milwaukee, Wis., has been awarded the contract for furnishing the city of St. Paul, Minn., with water meters, from 5/8-inch to 1 1/4-inch inclusive, for its 1916 requirements.

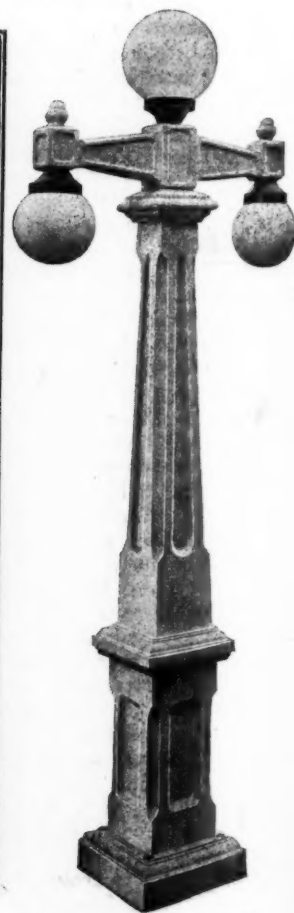
The United States Cast Iron Pipe & Foundry Company, Burlington, N. J., announces the removal of its Southern sales and traffic offices from Chattanooga, Tenn., to 1002 American Trust and Savings Bank Building, Birmingham, Ala. This change becomes effective April 1, 1916.



Highway Sign.



Lincoln Highway Marker.
"NATIONAL" CONCRETE PRODUCTS.



Boulevard Standard.

The Electro Bleaching Gas Company, manufacturers of liquid chlorine and the well-known sterilization apparatus, announces the removal of its general offices from 27 Madison avenue to more commodious quarters at 18 East 41st street, New York City.

Layne & Bowler Company, 408 Interstate Building, Kansas City, Mo., recently made a remarkable record in a "hurry-up" order. On Dec. 27, 1915, the American Lead & Zinc Company telephoned to the Layne & Bowler Los Angeles office asking for pumps for dewatering its mine at Mascot, Tenn. The next day a contract was closed for five 16-inch 320-foot pumps. These were all special and special patterns and castings had to be made which necessitated working the shops steadily day and night. Just eight days after the first information was received the first car was sent out by express from Los Angeles. The following day the second car went out, and three days later the third. The shafting for the most part was purchased in the East and worked over, threaded, etc., at the Memphis and Knoxville shops. This material was also shipped by express, running the expressage up in the entire job well over \$13,000. Telegraph and telephone charges totaled \$241. The extraordinary rush in this matter is explained by the fact that the mining company was losing something like \$5,000 a day while the mines were shut down.

Three installers and fifty helpers then worked in the eight-hour shifts on the installation, and by Jan. 14 the first pump was running and exceeding the guarantee on a twelve-hour run. By January 25 the mines were completely dewatered. In less than 30 days, therefore, from the time the first information was telephoned, Layne & Bowler had the pumps built, shipped, installed and the mines completely dewatered in condition to operate.

The Goodyear Tire & Rubber Company, Akron, O., through F. H. Sawyer, manager fire truck tire department, has just given out figures showing that 59 per cent of all the new fire apparatus that started rolling in 1915 in the United States and Canada, was delivered by the manufacturer on Goodyear tires. During the year 164 new cities were added to the list of cities already using them. Of the cities which had used Goodyears previously, 83 specified them in ordering new equipment. Goodyear tires have also found a place as equipment on other municipal cars. Including all cars used for municipal purposes it is figured that Goodyear equipped 63½ per cent of all this class of cars delivered by manufacturers in 1915.

A list of cities that ordered Goodyear tires during February, 1916—either as specification on new trucks ordered, or as renewals on old apparatus in use—follows:

Laurel, Miss.; Coatesville, Pa.; Springfield, Ohio; Minneapolis, Minn.;

Boston, Mass.; Kansas City, Mo.; Port Carbon, Pa.; Baltimore, Md. (4 trucks and 8 tractors); Woodstock, Ill.; Quincy, Ill.; Streator, Ill. (2 trucks); Chehalis, Wash.; Ypsilanti, Mich.; Knoxville, Tenn.; Taunton, Mass. (2 trucks); Independence, Kan.; Canton, Ohio; Venice, Cal. (2 trucks); Coleman, Texas; Hopedale, Mass.; Brookline, Mass.; Newville, Pa.; Duluth, Minn.; Haddonfield, N. J.; Owensboro, Ky.; York, Pa.; Tahlequah, Okla.; Larchmont, N. Y.; Barrington, R. I.; Palmer, Mass.; Roswell, New Mex.; Bradentown, Fla.; Buffalo, N. Y.; Wichita, Kan.; Westbury, L. I.; Katonah, L. I.; Logansport, Ind.; Manchester, N. H.

The Jeffrey Manufacturing Company, Columbus, O., announces the organization of a new department to handle the sale of a line of small rock and ore crushers. With this equipment will be furnished the well-known line of Jeffrey elevators, conveyors and screens. The company will specialize in the manufacture of small crushers only which will fit in with the Jeffrey equipment such as pulverizers, loaders and sand and gravel machinery. These machines have been developed for particular use in the following fields: Road building, contracting, mining, rock crushing, in connection with pulverizers, in gravel plants and in block and tile plants. This department will be in charge of Leroy A. Kling, formerly sales manager of the road machinery department of the Wheeling Mold & Foundry Company, Wheeling, W. Va. The company is interested in hearing from agents who are qualified to handle the sales of these products in their territory.

NEWS OF THE SOCIETIES

(Continued from page 450.)

In the department of inebriety, Bailey B. Burritt, general director of the Association for the Improvement of the Poor, chairman, the subject will be treated from the standpoint of its effect on mortality from the life insurance standpoint in the calculations of large employers and in the fabric of the labor problem. It is also covered from the standpoint of its relation to the subject of mental hygiene. A round table talk will be on the subject, "What Shall We Do When the Breadwinner Is Intemperate?" The Rev. Charles Stelzle of New York, noted in labor circles, is a speaker in this division, as is Alexander Fleischer, supervisor of the welfare division of the Metropolitan Life Insurance Company.

The division of promotion of social programs and public and private charities deal more intimately with the technical problems of the various charitable and welfare organizations, as does the department of public and private charities.

The department of unemployment, William H. Pear, general agent of the Provident Association, Boston, chair-

man, and Charles E. Merriam, University of Chicago, vice chairman, will take up a problem of general interest to workers and business men. In this department the question of what to do with the immigrants after the European war will be considered. A speaker for the subject has not yet been named.

United States Civil-Service Examination.

Engineer-Economist (Male), April 18, 1916.

The United States Civil Service Commission announces an open competitive examination for engineer-economist, for men only. From the register of eligibles resulting from this examination certification will be made to fill vacancies in this position in the Office of Public Roads and Rural Engineering, Department of Agriculture, Washington, D. C., at salaries ranging from \$2,000 to \$2,500 per annum.

The duties of this position will involve questions of organization, questions of the various phases of financing public improvements, the correlation and economic disposition of equipment, the installation and operation of adequate systems of cost keeping and reports, the dissemination of knowledge by means of lectures and papers (referred to as extension work), and in some cases the supervision of road construction and maintenance.

Competitors will not be assembled for examination, but will be rated on the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. Education	20
2. Experience in the practice of engineering	40
3. Experience in economic and extension work	40
Total	100

Graduation in civil engineering from a technical school or college of recognized standing and at least four years' experience in highway engineering, two years of which must have been in responsible charge of highway work involving practical application of economic features, such as questions of organizations, the various phases of financing public improvements, the correlation and economic disposition of equipment, the installation and operation of adequate systems of cost keeping and reports, and the dissemination of knowledge by means of lectures and papers; or in the case of those who have not graduated, at least eight years' experience in highway engineering work, or a combination of educational training and experience aggregating eight years, two years of which must have been in responsible charge of highway work involving practical application of economic features, such as are described above, are prerequisites for consideration for this position. Under the subject of education special credit will be given for training in general economics. Such training, therefore, should be fully stated in the application. Applicants must not have reached their fiftieth birthday on the date of the examination.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Ill.	Marshall	Apr.	1..2 block brick paving and concrete curb and gutter.....	W. R. Paige, City Engineer.
Ind.	Muncie	10 a.m., Apr.	1..Improving several streets.....	J. R. Kelly, City Clerk.
Minn.	Walker	10.30 a.m., Apr.	1..Constructing 8 miles road; cost, \$800.....	C. D. Bacon, Co. Auditor.
Sask.	Moose Jaw	Apr.	1..Paving approaches to freight sheds.....	C. S. Moss, Res. Engr., C. P. R.
Wash.	Pomeroy	Apr.	1..20,000 yds. pavement and 7,600 ft. curb and gutter; cost, \$75,000.....	J. E. Tupper, City Engineer.
Tenn.	Morristown	Apr.	1..Constructing roads, cost \$150,000.....	H. B. Havelly, Engineer.
W. Va.	Charleston	Apr.	1..16,000 yds. brick pavement.....	J. N. Clark, City Engr.
Ill.	Edwardsville	2 p.m., Apr.	1..Constructing 6,000 ft. concrete road.....	Bd. of Highway Comrs.
O.	Dayton	Apr.	1..7,000 gals. road oil and 5,200 yds. excavation.....	W. H. Aszling, Clk. Co. Comrs.
Wash.	Okanagon	Apr.	1..Constructing gravel road, cost \$12,000.....	H. E. Smith, Co. Engr.
Wash.	Walla Walla	Apr.	1..100,000 sq. yds. hard surface pavement.....	W. R. Rehorn, City Engr.
Ky.	Greenville	Apr.	1..6 miles of street, cost \$22,500.....	avor.
Ind.	Hartford City	Apr.	1..Constructing macadam roads; cost, \$125,000.....	F. P. Wallace, Co. Engr.
Wis.	New London	2 p.m., Apr.	2..26,000 sq. yds. reinforced concrete pavement (material already purchased).....	C. J. Thompson, City Clerk.
N. D.	Aneta	8 p.m., Apr.	3..Cement walks, crosswalks and culverts for 1916.....	E. H. Lowen, City Aud.
N. D.	Carrington	8 p.m., Apr.	3..Cement sidewalks and crosswalks for 1916.....	H. L. Winterer, City Aud.
N. D.	Granville	6 p.m., Apr.	3..Constructing sidewalks during 1916.....	C. J. Krogfoss, City Aud.
N. D.	Wahpeton	7.30 p.m., Apr.	3..Constructing walks, curbs and gutters for 1916.....	S. H. Murray, City Aud.
Minn.	Park River	7.30 p.m., Apr.	3..Crosswalks and sidewalks for 1916.....	F. J. Prochaska, City Aud.
Minn.	St. Paul	10 a.m., Apr.	3..300 to 800 tons road asphalt and 50,000 gals asphalt road oil (40%).....	G. J. Ries, County Auditor.
Ill.	Edwardsville	2 p.m., Apr.	3..Constructing 2,300 ft. concrete road.....	Board of Highway Comrs.
Ind.	Rockport	Apr.	3..7.9 miles rock road.....	J. F. Stocking, Co. Auditor
O.	Springfield	Apr.	3..Paving two streets.....	W. J. Barrett, City Aud.
Minn.	St. Paul	10 a.m., Apr.	3..Oil distributor and force pump; grading and improving roads.....	G. J. Ries, Co. Aud.
Pa.	Franklin	4 p.m., Apr.	3..14,000 sq. yds. wire-cut brick.....	rd. City Clerk.
Ky.	Earlington	Apr.	3..One mile macadam streets.....	W. E. Roth, Mayor.
Wis.	Manitowoc	4 p.m., Apr.	3..One or more cars of road oil.....	J. J. Kelley, City Clk.
Ala.	Monroeville	Apr.	3..Grading, draining and graveling road.....	C. E. Barker, Co. Engr.
N. D.	Grafton	6 p.m., Apr.	3..Sidewalks and street and alley crossings for one year.....	J. H. Johnson, City Auditor.
nd.	Kentland	2 p.m., Apr.	3..Grading, paving and improving roads (2 jobs).....	S. R. Sizelove, Co. Aud.
Ind.	Greenfield	10 a.m., Apr.	3..Grading, paving and improving road.....	H. J. Rhue, Co. Aud.
Ind.	Jasper	2 p.m., Apr.	3..Grading, paving and improving roads.....	J. H. Seng, Co. Aud.
N. D.	Mandan	10 a.m., Apr.	3..Concrete mixer, scrapers, graders and road ploughs.....	Lee Nichols, County Auditor.
S. D.	Huron	Apr.	3..Paving Dakota Avenue.....	S. S. Oviatt, City Auditor.
N. D.	Sherbrooke	2 p.m., Apr.	3..Constructing roads.....	G. J. Mustad, County Auditor.
Mass.	Revere	Noon, Apr.	3..Constructing 4,500 sq. yds. granolithic sidewalk.....	C. G. Richmond, Supt. Public Works.
Minn.	Elbow Lake	10 a.m., Apr.	3..67,000 cu. yds. grading and 60,000 linear ft. turnpiking.....	C. M. Nelson, Co. Aud.
Ga.	College Park	Apr.	3..1,500 sq. yds. tile or concrete walks.....	W. M. Alexander, Clk.
O.	Salem	Noon, Apr.	3..6,620 yds. brick pavement.....	I. N. Russell, Dir. Pub. Serv.
Ind.	Rushville	2 p.m., Apr.	3..Constructing road.....	A. R. Holden, Co. Aud.
la.	Sheldon	Apr.	3..Roadwork during 1916.....	County Supervisors.
Ala.	Camden	Apr.	3..Constructing gravel or sand-clay road (3 3-4 miles).....	Blair Hughes, Supt. of Roads.
N. D.	Rugby	Apr.	3..Constructing sidewalks during 1916.....	T. B. Torson, City Auditor.
N. D.	Williston	8 p.m., Apr.	3..Constructing sidewalks and crossings during 1916.....	G. G. Harvey, City Auditor.
O.	Cincinnati	Noon, Apr.	3..Concrete walk and steps.....	C. F. Hornberger, Dir. Pub. Service.
R. I.	Providence	2.15 p.m., Apr.	3..Crushed traprock for 1916.....	W. C. Pelkey, Clk. Bd. Contract & Supply.
Ind.	Paoli	2 p.m., Apr.	3..10,200 ft. gravel and macadam road.....	E. A. Palmer, County Auditor.
Wash.	Everett	2 p.m., Apr.	3..Grading one mile Pacific highway.....	W. C. Bickford, County Engr.
Ind.	Franklin	2 p.m., Apr.	3..Constructing gravel road.....	J. G. Gregg, Co. Auditor.
O.	St. Clairsville	noon, Apr.	3..1/4-mile brick paving.....	O. B. Nary, Village Clerk.
Ind.	Lawrenceburg	noon, Apr.	3..Ten-ton roller and scarifier.....	H. E. Lutherbeck, Co. Auditor.
Ind.	Tipton	10 a.m., Apr.	3..Constructing gravel road.....	Oscar Vanness, Co. Auditor.
Ind.	Greensburg	1 p.m., Apr.	3..Ten-ton roller, scarifier, sprinkling tank, trucks and engine grader.....	J. C. Barbe, County Auditor.
Cal.	Sacramento	8 p.m., Apr.	3..Paving with concrete.....	State Highway Commission.
Pa.	Duquesne	noon, Apr.	3..Grading, curbing and paving.....	J. A. Conlin, Boro. Clerk.
Ont.	Kingston	5 p.m., Apr.	3..300 tons refined asphalt.....	R. J. McClelland, City Engr.
N. Y.	Mayville	8 p.m., Apr.	3..Cement walks and crossings.....	Henry Leum, City Auditor.
N. J.	Westfield	8 p.m., Apr.	3..1,000 lin. 4-ft. concrete sidewalk; 6,000 yds. macadam and 1,500 ft. concrete curb and gutter.....	A. W. Vars, Town Surveyor.
Miss.	Hattiesburg	Apr.	3..Improving several streets.....	Highways Comrs., Dist. Nos. 1 and 3.
W. Va.	Pineville	Apr.	3..Constructing 35 miles of earth road.....	Will P. Cook, Clk. Co. Court
la.	Sac City	Apr.	3..Grading, curbing and paving.....	C. C. Johnson, City Clerk
Cal.	Fresno	Apr.	3..10,000 bbls. road oil.....	W. H. Ryan, City Clerk
Minn.	St. Paul	10.30 a.m., Apr.	3..Furnishing creosoted blocks, bricks, Portland cement, pitch and asphalt filler and other materials for paving streets; curbing and improving streets.....	August Hohenstein, Pur. Agt.
N. J.	West Orange	8.15 p.m., Apr.	4..Flag and concrete walk.....	G. W. Foster, Town Clerk.
Pa.	Harrisburg	Noon, Apr.	4..3,440 sq. yds. sheet asphalt and 2,320 ft. of curbing.....	W. H. Lynch, Supt. of Streets.
Ind.	South Bend	10 a.m., Apr.	4..Paving several streets.....	Veronica Sweeney, Clk. Bd. Pub. Wks.
S. D.	McIntosh	2 p.m., Apr.	4..Dragging and maintaining county road.....	R. E. Smith, Co. Aud.
O.	Bryan	Apr.	4..Constructing slag or macadam roads.....	County Comrs.
Minn.	Wheaton	Noon, Apr.	4..7 state road jobs, requiring 9,300 cu. yds. excavation and 112,500 lin. ft. turnpiking; concrete and metal culverts.....	J. T. Erickson, Co. Aud.

BIDS ASKED FOR

STATE	CITY	RECD UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind.	Rensselaer	2 p.m., Apr.	4.. Grading, paving and improving road.....	J. P. Hammond, Co. Aud.
Ind.	Decatur	10 a.m., Apr.	4.. Macadamizing road	T. H. Baltzell, Co. Aud.
O.	Columbus	Noon, Apr.	4.. 1,500 tons lake sand, 120 tons of refined asphalt, 150 tons limestone dust, and 8,000 gals. asphalt flux.....	G. A. Borden, Pres. Bd. Pur.
Ind.	Bedford	1 p.m., Apr.	4.. Grading, paving and improving roads.....	E. M. Edwards, Co. Aud.
Ind.	Washington	2 p.m., Apr.	4.. Grading, paving and improving roads (2 jobs).....	J. G. Clark, Co. Aud.
Ind.	Winamac	Noon, Apr.	4.. Grading, paving and improving roads.....	W. E. Munchenberg, Co. Aud.
Ind.	Noblesville	10 a.m., Apr.	4.. Grading, paving and improving roads.....	W. D. Horton, Co. Aud.
O.	Wooster	Noon, Apr.	4.. 1,990 ft. brick pavement.....	Max Bloomberg, Dir. Public Service.
Wyo.	Sheridan	10 a.m., Apr.	4.. Grading road	J. A. Withrow, Co. Clerk.
O.	Columbus	noon, Apr.	4.. Paving with asphalt and brick	G. A. Borden, Dir. Pub. Service.
Ind.	Goshen	noon, Apr.	4.. Constructing township road	A. R. Bemenderfer, Co. Auditor
Ind.	Delphi	noon, Apr.	4.. Constructing road	H. D. Good, County Auditor.
Ind.	Vincennes	2 p.m., Apr.	4.. 8,000 ft. of gravel road	J. L. Muentzer, Co. Auditor.
Wash.	Mt. Vernon	Apr.	4.. 1 1/2 miles concrete pavement.....	A. L. Strong, Co. Engineer.
Wash.	South Bend	Apr.	4.. Surfacing with rock or gravel 1 1/2 miles; clearing and grading 1 1/2 miles	C. B. Nims, Co. Engineer.
R. I.	Westerly	4 p.m., Apr.	4.. 25,700 ft. concrete or bituminous concrete (Warrenite, Amiesite or Hassam accepted)	Highway Committee.
Conn.	Meriden	noon, Apr.	4.. Wood block and reinforced concrete pavements on three streets	City Engineer.
Ind.	Bedford	1 p.m., Apr.	4.. Gravel and macadam road	E. W. Edwards, Co. Auditor.
S. I.	New Brighton	noon, Apr.	4.. 216,000 gallons road oil and binder; 7,000 cu. yds. broken stone, grits and screenings	C. D. Van Name, Boro. Pres.
Wash.	Ephrata	Apr.	4.. 11 1/2 miles permanent highway	C. T. Sanders, Co. Clerk
Miss.	Greenville	7.30 p.m., Apr.	4.. Paving 4 1/2 miles of streets.....	Board of Works.
Ind.	Ft. Wayne	Apr.	4.. 50,000 gallons liquid road oil.....	Wm. Urquhart, City Clerk.
Ind.	Wabash	2 p.m., Apr.	4.. Grading, paving and improving road.....	W. F. Batman, Co. Auditor.
La.	Le Mars	8 p.m., Apr.	4.. Grading, paving and improving roads.....	F. P. Kircher, Co. Auditor.
Minn.	Detroit	3 p.m., Apr.	4.. Sidewalks, curbs, gutters and culverts.....	D. S. Struble, City Clerk.
Mont.	Sidney	2 p.m., Apr.	4.. 8 1/2 miles grading and ditching.....	J. A. Warum, Co. Auditor.
La.	Storm Lake	Apr.	4.. 37 scrapers, 15 fresno scrapers, 33 ploughs, road graders, etc.	J. H. Bawden, Ch. County Bd.
Wis.	Racine	2 p.m., Apr.	4.. 70,000 sq. yds. asphalt, bitulithic or concrete pavement and 45,000 lin. ft. curb and gutter.....	J. E. Buland, City Clerk.
Wis.	Beaver Dam	8 p.m., Apr.	5.. 30,000 sq. yds. macadam roadway.....	James Mutter, Co. Hwy. Comr.
Minn.	Bemidji	2 p.m., Apr.	5.. 30,000 to 70,000 gals. of road oil and 1,000 to 5,000 yds. crushed stone	J. E. Fischer, Ch. Bd. P. Wks.
N. D.	Center	Apr.	5.. Constructing four county roads.....	J. L. George, Co. Auditor.
Wash.	Chehalis	Apr.	5.. Road graders, scrapers, drags and ploughs.....	F. J. V. Kiebert, Co. Aud.
Ind.	Jasper	10 a.m., Apr.	5.. One course concrete roads, to cost \$46,700.....	J. D. Neville, Co. Engr.
N. J.	Paterson	2 p.m., Apr.	5.. Constructing road	J. H. Seng, Co. Auditor.
Mich.	Reeman	10 a.m., Apr.	5.. Repairing macadam and asphalt concrete and furnishing stone	Isaac Wollenberg, Ch. Road Committee.
Minn.	Stuntz	Apr.	5.. Constructing 9 miles of gravel road.....	J. M. Beem, Clk. Township Bd.
Ind.	Muncie	10 a.m., Apr.	5.. Improving 2 miles of road.....	Town Board.
N. J.	Freehold	Apr.	5.. Constructing gravel or macadam highways.....	F. M. Williams, Co. Aud.
Ind.	Shelbyville	10 a.m., Apr.	5.. Constructing and repairing roads and bridges	C. E. Close, Clerk.
Ind.	Huntington	Apr.	5.. Furnishing 2,000 yds. crushed stone; constructing 3 miles of gravel road	F. W. Fagel, County Auditor
La.	Audubon	10 a.m., Apr.	5.. Constructing two roads	County Commissioners.
Ind.	LaPorte	Apr.	6.. 46,850 sq. yds. pavement and 20,630 yds. concrete and gutter	W. J. Laubender, City Clerk.
Ind.	Indianapolis	10 a.m., Apr.	6.. Constructing roads	County Auditor.
La.	Jefferson	1 p.m., Apr.	6.. Constructing gravel road	L. K. Fessler, Co. Aud.
W. Va.	Wheeling	Aug.	6.. Spreading gravel on road.....	J. E. Snodgrass, Clk. Twp. Tr.
W. Va.	Huntington	Apr.	6.. Paving 10 miles of road, cost \$200,000.....	Oliver & Maupin Engineering Co.
Ark.	Jonesboro	2 p.m., Apr.	6.. Paving 10 miles with brick	Oliver & Maupin Engrg. Co.
Ida.	Pocatello	5 p.m., Apr.	6.. 13 miles asphalt road on gravel base and 3 miles gravel road	Lund & Hill, Engineers, Little Rock.
Ind.	Rensselaer	2 p.m., Apr.	6.. Grading, graveling and constructing curbs and gutters.....	J. H. Giles, City Engineer
Ill.	Dixon	Apr.	6.. Crushed stone road	J. P. Hammond, Co. Auditor.
Ind.	Columbus	Apr.	6.. Constructing brick highways, \$82,500 available.....	F. D. Palmer, Town Clerk
Ill.	Elgin	10.30 a.m., Apr.	6.. Crushed stone road	W. H. Scott, Co. Auditor
N. Y.	New York	10.30 a.m., Apr.	6.. 27,050 sq. yds. brick pavements and 9,700 ft. concrete curb and gutter	M. H. Brightman, City Engr.
Minn.	Duluth	2 p.m., Apr.	6.. Regulating, grading and laying curbs and walks on several streets	D. Mathewson, Pres., Boro. Bronx.
Ind.	Crown Point	1 p.m., Apr.	6.. 5 1/2 miles of road.....	O. Halden, Co. Auditor.
N. Y.	New York	2 p.m., Apr.	6.. Constructing gravel road.....	Edward Simon, Co. Aud.
Ky.	Louisville	2 p.m., Apr.	6.. Regulating, grading and constructing curbs and sidewalks	M. M. Marks, Boro Pres.
O.	Cincinnati	Apr.	6.. Constructing sidewalks on several streets.....	Roger McGrath, Sec. Bd. Pub. Wks.
O.	Cleveland	Noon, Apr.	7.. 94.21 miles of state highway construction.....	C. Cowen, St. Hwy. Comr.
O.	Cleveland	Noon, Apr.	7.. Paving brick	Comr. of Streets.
O.	Medina	Noon, Apr.	7.. Relaying and repairing sidewalks.....	Comr. of Engineering.
Neb.	Havelock	8 p.m., Apr.	7.. Two miles of brick road	S. F. Ganyard, Clk. Twp. Com.
O.	Sandusky	Apr.	7.. Paving, estimated cost \$5,219.....	A. J. Blount, City Clerk.
O.	Cincinnati	noon, Apr.	7.. 2.1 miles concrete, brick or macadam road.....	County Comrs.
Wash.	Pomeroy	Apr.	7.. Setting granite curbs, paving with asphalt and constructing drains and inlets	Frank Krug, City Engineer.
Mich.	Coldwater	1.30 p.m., Apr.	7.. 28,000 sq. yds. first class pavement, 7,500 ft. curb and gutter and 7,500 cu. yds. excavation.....	Harry St. George, City Clerk.
Fla.	Bronson	Apr.	10.. One mile of concrete road.....	County Road Comrs.
Fla.	Eustis	4 p.m., Apr.	10.. 29 1/2 miles or road.....	A. T. Hardee, Co. Clerk.
O.	Euclid	Noon, Apr.	10.. Constructing pavements	Isham Randolph & Co., Engineers, Jacksonville, Fla.
Pa.	Allentown	5 p.m., Apr.	10.. Grading, curbing and paving with brick or asphalt and constructing sidewalks.....	F. A. Pease Engineering Co., Marshall Bldg., Cleveland.
N. J.	Camden	Apr.	10.. 600 tons crushed stone and one to ten carloads asphalt for Whitehall Township	Bascom and Sieger, Engrs., Allentown Bank Bldg.
Miss.	Jackson	Apr.	10.. Building concrete bridge and restoring road	J. J. Albertson, Co. Engr.
Mich.	Hartford	Apr.	10.. Improving and graveling roads.....	J. L. Redfield, Edwards, Miss.
Ind.	South Bend	11 a.m., Apr.	10.. Grading and paving with brick.....	W. J. Cleary, City Engr.
O.	New Philadelphia	1 p.m., Apr.	10.. Grading, paving and improving road.....	A. F. Wolf, Co. Aud.
Minn.	Moorhead	8 p.m., Apr.	10.. Grading roads	R. H. Mussdorfer, Co. Aud.
N. J.	Dover	Apr.	10.. Cement sidewalks and street crossings.....	R. G. Price, City Clerk.
Md.	Baltimore	Apr.	11.. 38,000 sq. yds. Amiesite or bit. mac.....	W. H. Hoskins, Clk., Morris-town
N. J.	Belvidere	11.30 a.m., Apr.	11.. Paving, including 5,000 cu. yds. excavation.....	State Road Commission
			11.. 8.2 miles bituminous macadam road	F. W. Salmon, Co. Engineer, Natcong, N. J.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. J.	Bayonne	Apr. 11.	Improving 20 streets	City Engineer.
Neb.	Nebraska City	noon, Apr. 11.	100,000 cu. yds. of grading	Louis Stutt, Co. Clerk.
N. Y.	New York	11 a.m. Apr. 11.	Three miles bituminous macadam and brick highways at Kensico reservoir	Bd. of Water Supply.
Minn.	Hastings	2 p.m., Apr. 11.	Grading 2 1/2 miles of road	P. A. Hoffman, Co. Auditor.
O.	Akron	11 a.m., Apr. 11.	Paving and macadamizing roads (3 jobs)	U. G. High, Clk. Co. Comrs.
Ind.	Indianapolis	10 a.m., Apr. 11.	Grading, paving and improving road	L. K. Fesler, Co. Aud.
N. C.	Gastonia	Apr. 12.	Tarvia binding and repair work	O. G. Falls, Kings Mountain.
Wash.	Palouse	Apr. 12.	19,000 yds. concrete paving, cost \$30,000	J. J. Johnson, City Clerk
O.	Salem	Apr. 13.	6,620 yards brick pavement, cost \$14,000	Director of Pub. Service
O.	Akron	11 a.m., Apr. 13.	Grading, draining, curbing and paving	U. G. High, Clk. Co. Comrs.
N. D.	Valley City	2 p.m., Apr. 13.	Constructing 9 miles of road	C. W. Nelson, Co. Aud.
Ind.	Pitts	10 a.m., Apr. 13.	Grading, paving and improving road	Oscar Vanness, Co. Aud.
O.	Bucyrus	Apr. 14.	Paving Marion and Gallion Pike	H. A. Keller, Engineer.
S. C.	Charleston	6 p.m., Apr. 14.	Curbing, constructing sidewalks and furnishing paving material during 1916	J. H. Dingle, City Engr.
Ind.	North Vernon	Apr. 14.	4,732 yds. first class pavement	Charles Miles, City Engr.
Ky.	Elkton	Apr. 15.	8 miles macadam road, cost \$24,000	A. B. Wilkins, Co. Judge.
Mich.	Houghton	Noon, Apr. 15.	13 miles of macadam road	R. Martin, Engineer.
O.	Wooster	Apr. 15.	Improving streets	O. A. Glerow, City Engr.
Pa.	Hazleton	Apr. 15.	40,000 yds. brick or other paving, cost \$89,000	B. E. Youngman, City Engr.
O.	Batavia	Apr. 15.	Constructing three miles of pavement	L. H. Lersn, Engineer, State Hwy. Dept., Columbus.
Ind.	Columbus	10 a.m., Apr. 16.	Grading, paving and improving roads (3 jobs)	W. H. Scott, Co. Aud.
la.	Marion	Apr. 17.	Paving 16 blocks	H. R. Green, Engr., Cedar Rapids.
Fla.	Lake City	7.30 p.m., Apr. 17.	21,000 sq. yds. sheet asphalt or brick and 23,000 ft. concrete curb	C. R. Horne, Engr.
Neb.	Norfolk	Apr. 17.	Street paving in four districts	P. F. Stafford, City Clerk
Fla.	Starke	Apr. 18.	Paving and sewers, \$45,000 available	J. B. McCrary, Co. Engrs., Atlanta, Ga.
Ky.	Shepherdsville	Apr. 18.	Thirteen miles county road	W. C. Herps, Co. Rd. Engr.
Okl.	Lawton	2 p.m., Apr. 18.	Constructing driveway, sidewalk, curb and gutters	R. P. Sanders, Comr. Public Property.
Fla.	Bartow	Apr. 18.	240 miles brick, asphalt and asphaltic concrete roads, cost, \$1,000,000	H. S. Jaudon Engineering Co., Savannah, Ga. (and Box 384 Bartow, Fla.)
Neb.	Lincoln	2 p.m., Apr. 18.	Grading and paving	H. E. Wells, Co. Clerk.
Ill.	Berwyn	8 p.m., Apr. 18.	Constructing cement sidewalks	O. N. Lindahl, Sec. Bd. Local Impr.
Fla.	Sarasota	Apr. 20.	Grading 19 miles; 28 miles sand-asphalt road	County Commissioners.
O.	Urbana	Apr. 20.	Improving streets, estimated cost \$10,000	E. F. Sweetman, City Engr.
N. Y.	Albany	1 p.m., Apr. 20.	Improving 13.75 miles state highways	Edwin Duffey, St. Hwy. Comr.
Ala.	Lafayette	Apr. 24.	Constructing 16 miles sand-clay roads	J. J. Robinson, Jr., Probate Judge.
Ind.	Frankfort	2 p.m., Apr. 27.	Constructing roads	Edward Spray, Co. Aud.
O.	Gallion	May 1.	Paving Grove Avenue; cost \$30,000	A. F. Unckrich, Dir. Pub. Serv.
Minn.	Eveleth	May 1.	Paving streets; estimated cost \$20,000	C. H. Williams, City Clerk.
Ind.	South Bend	May 1.	Paving 21 blocks; cost \$70,000	Board of Public Works.
Neb.	Winlock	May 1.	One mile concrete pavement; cost, \$12,000	City Clerk.
S. D.	Madison	May 15.	17,000 sq. yds. of paving	C. A. Trimmer, City Engr.
Ky.	Greenville	June 1.	Six miles macadam and dirt road, \$20,000 available	J. N. Fentress, Co. Clerk.
SEWERAGE				
Wis.	Racine	Apr. 1.	Sewer and water connections in six streets	Board of Pub. Wks.
Wis.	Watertown	2 p.m., Apr. 1.	820 ft. 10-in. vitrified pipe sewer and 4 catch basins	Board of Public Works.
Wis.	Wauwatosa	Apr. 1.	Constructing 3,380 ft. vit. pipe sewer	F. A. Torkelson, City Engr.
Ind.	Muncie	10 a.m., Apr. 1.	Constructing sewer in two streets	J. R. Kelly, City Clerk.
N. Y.	Buffalo	11 a.m., Apr. 1.	8-ft. brick sewer	A. W. Kreinheder, Supt. Pub. Works.
Tenn.	Morristown	4 p.m., Apr. 1.	Furnishing vitrified drain pipe	H. B. Havely, Engineer.
Tex.	Childress	Apr. 1.	Sewerage system disposal plant, cost \$30,000	R. G. Carraway, City Engr.
O.	Ada	Apr. 1.	Constructing sewers; cost about \$40,000	T. J. Smull, City Engineer.
Wis.	N. Milwaukee	Apr. 1.	Constructing sewer system; cost \$14,000	H. C. Webster, Engineer.
Ill.	Mattson	Apr. 1.	6,100 ft. 24 to 30-in. tile	C. L. James, Engineer.
la.	Wall Lake	Apr. 1.	Straightening and deepening river and draining swamp	Seth Dean, Eng., Glenwood.
Mich.	Macon	Apr. 1.	Constructing branch of Macon drain	D. S. Sullivan, Co. Drain Comr.
Wis.	Sheboygan Falls	Apr. 1.	Constructing 2 miles 8 to 15-in. sewer in eight streets	F. R. Kroeger, City Clerk.
Minn.	Walker	10.30 a.m., Apr. 1.	Constructing drainage ditches	C. D. Bacon, Co. Auditor.
Minn.	Aitkin	1 p.m., Apr. 1.	Constructing county ditches	H. C. Beecher, Co. Auditor.
N. Y.	New York	2 p.m., Apr. 1.	Altering and improving sewers	M. M. Marks, Boro. President.
Wis.	White Fish Bay	8 p.m., Apr. 1.	Furnishing map and plans for sewer system	E. J. Martel, Village Clerk.
Wis.	Oconomowoc	Noon, Apr. 1.	8 to 24-in. sewers, 8 manholes and 22 catch basins	Albert Schoenicke, City Clk.
Tex.	Cuero	4 p.m., Apr. 1.	Five miles drainage ditch	W. E. Dickerson, Dist. Engr.
N. J.	Westfield	8 p.m., Apr. 1.	2,175 ft. 8-in. sanitary sewer	A. W. Vars, Town Surveyor.
N. J.	Caldwell	8 p.m., Apr. 1.	Constructing sewers and appurtenances	Boro Engr.
Minn.	St. Paul	10.30 a.m., Apr. 1.	Furnishing sewer pipe and sewer brick; constructing sewers	August Hohenstein, Pur. Agt.
N. Y.	Albany	3 p.m., Apr. 1.	Constructing sewers	Bd. of Contract & Supply.
Ind.	East Chicago	9.30 a.m., Apr. 1.	Sewers in several streets	T. Y. Richards, Clerk, Bd. Pub. Wks.
N. Y.	Ocean Beach (Long Is.)	Apr. 4.	Constructing sewers and sewerage treatment works	A. J. Provost, Jr., Engineer.
Ind.	Michigan City	10 a.m., Apr. 4.	10-in. vitrified tile sewer	39-41 W. 38th St., N. Y. City.
Minn.	Worthington	2 p.m., Apr. 4.	Constructing tile drainage ditch, cost \$18,000	Alex. Spychalski, City Clerk.
la.	Davenport	2 p.m., Apr. 4.	Sewer and water services for 1916	Gus Swanberg, Co. Auditor.
Mont.	Billings	Apr. 4.	9,670 ft. 18 to 54-in. concrete and pipe sewer, cost \$66,350	J. W. Crowley, Comr. P. Wks.
Ind.	South Bend	10 a.m., Apr. 4.	Constructing sewers	E. M. Sneckenberger, City Engr.
Ind.	Frankfort	2 p.m., Apr. 4.	3,160 ft. 10 to 24-in. tile sewer, cost \$6,780	Veronica Sweeney, Clk. Board Pub. Wks.
Wis.	New London	8 p.m., Apr. 5.	Sewers in several streets	R. H. Boynton, City Engr.
Mich.	Ann Arbor	Apr. 5.	1,700 ft. 30 to 39-in. segment block sewer and 300 ft. 24-in. vitrified pipe sewer	C. J. Thompson, City Clk.
Ind.	Lafayette	Apr. 5.	18,211 ft. 15 to 36-in. vitrified segment block or reinforced concrete sewers, estimated cost \$73,819	Manley Osgood, City Engr.
Ind.	Rensselaer	Apr. 5.	Cleaning and repairing drainage ditch	E. J. Vaughan, City Clerk
N. Y.	Brooklyn	11 a.m., Apr. 5.	12 to 15-in. pipe sewers	M. G. Price, Drainage Comr.
O.	Cleveland	Noon, Apr. 5.	Constructing sewers	L. H. Pounds, Boro. Pres.
N. Y.	New York	10.30 a.m., Apr. 6.	About 400 ft. 12-in. sewer	Comr. of Engineering.
la.	Brooklyn	7.30 p.m., Apr. 7.	Constructing sewers (1,000 ft.)	D. Mathewson, Pres. Boro. of Bronx.
N. Y.	Watertown	8 p.m., Apr. 7.	1,320 ft. 8 to 10-in. sewer	Frank Talbot, Town Clerk.
Mont.	Billings	Apr. 7.	Two storm sewers, 18 to 54-in.; cost, \$63,000	E. W. Sayles, City Engr.
Ind.	Winamac	Apr. 8.	4 miles of drainage ditch	E. Sneckenberger, City Engr.
Okl.	Oklahoma City	2 p.m., Apr. 10.	Ditch for diverting river channel	C. E. Paul, Construction Comr.
N. C.	Madison	Apr. 10.	Storm and sanitary sewers, Imhoff tanks, sludge bed and ejector station	H. C. Adams, Co. Surveyor.
				C. L. Armsby, Clerk.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. J.	Montclair	Apr. 10	Concrete and vit. pipe storm sewer	E. S. Closson, Town Engr.
Ill.	Madison	Apr. 10	35,000 ft. tile sewers, cost \$155,000	W. Champion, Secy. Bd. Local Improvements.
Fla.	Eustis	4 p.m., Apr. 10	Constructing sanitary sewer system, Imhoff tanks, sludge drying bed and pneumatic ejector station; constructing storm sewer system	Isham Randolph & Co., Engineers, Jacksonville, Fla.
Ind.	Hammond	10 a.m., Apr. 10	Constructing sewer	Board of Public Works.
Wis.	Oconto Falls	7 p.m., Apr. 10	1,470 ft. 10 to 24-in. sewer and 5 manholes	William Campbell, Village Clk.
Minn.	Hastings	Apr. 11	Constructing drainage ditches	P. A. Hoffman, Co. Aud.
Ark.	Rector	8 p.m., Apr. 11	6 miles 8 to 12-in. sewers, 79 manholes, 29 flush tanks and settling tank	F. L. Wilcox, Engr., Syndicate Trust Bldg., St Louis
Md.	Baltimore	noon, Apr. 11	2,000 ft. of sewer with manholes, etc.	State Road Commission
N. Y.	Brooklyn	11 a.m., Apr. 12	Constructing many sewers, 12 to 114-in. diameter, mostly brick	L. H. Pounds, Boro. Pres.
Minn.	Redwood Falls	1 p.m., Apr. 12	Drainage ditches, cost \$120,788	L. P. Larson, Co. Aud.
Fla.	Jacksonville	8 p.m., Apr. 14	Constructing 18 miles 8 to 54-in. sanitary and storm water sewers	L. D. Smoot, Comr. Pub. Wks.
S. C.	Charleston	6 p.m., Apr. 14	Furnishing 8 to 14-in. terra cotta pipe for 1916	J. H. Dingle, City Engr.
Wis.	New London	8 p.m., Apr. 15	Sanitary sewers in several streets	C. J. Thompson, City Clerk.
Pa.	Hazleton	Apr. 15	2,800 ft. 24 to 54-in. sewers, cost \$22,000	B. E. Youngman, City Engr.
S. D.	Watertown	Apr. 17	Motor-driven centrifugal pumps and other equipment	F. W. Schreiber, City Engr.
Neb.	Norfolk	5 p.m., Apr. 17	Extending Park avenue storm sewer	P. F. Stafford, City Clerk.
Minn.	Wabasha	Apr. 18	Constructing sewers (complete)	J. M. Schouweiler, City Recorder.
Fla.	Starke	Apr. 18	Sanitary sewer system	J. B. McCrary Co., Engrs, Atlanta, Ga.
N. Y.	Binghamton	Apr. 19	Sewer construction, estimated cost \$150,000	W. Earl Weller, City Engr.
N. Y.	Albany	3 p.m., Apr. 20	Sewers in several streets	Bd. of Contract and Supply.
O.	Urbana	Apr. 20	Storm sewers, \$12,900 available	E. F. Sweetman, City Engr.
Argentina	Buenos Aires	Apr. 24	Furnishing machinery	Dept. Obras Sanitarias de La Nacion.
O.	Xenia	noon, Apr. 27	Sewage disposal plant, cost \$70,000	A. P. Shumaker, City Engr.
Tex.	Amarillo	May 1	Sewer system and disposal plant; cost \$10,000	M. H. Hardin, City Engineer.
Minn.	Anoka	May 1	Sewer construction, cost \$55,000	City Clerk.
N. J.	Lyndhurst	May 20	Constructing sewers; cost \$200,000	Bowe & Wessells, Engineers, Rutherford.
WATER SUPPLY				
Sask.	Moose Jaw	noon, Apr. 1	Excavating reservoir	T. C. MacNabb, Div. Engr., C. P. R.
Ala.	Cullman	Apr. 1	Laying 2 miles of 6-in. water mains; cost \$12,000	A. G. Coe, City Clerk.
Ind.	Versailles	1 p.m., Apr. 1	Gravity waterworks system	O. C. Bushing, Town Clerk.
W. Va.	Clarksburg	Apr. 1	One-story brick and concrete pumping station, 40x60	Geo. W. Fuller, Engineer, N. Y. City.
Wis.	Racine	Apr. 1	Water and sewer connections in six streets	Board of Pub. Works
Minn.	Duluth	11 a.m., Apr. 1	36-in. special for creek crossing	Seizer & Finley, Engineers,
Neb.	Bayard	6 p.m., Apr. 1	Constructing waterworks, to cost \$15,000	Scotts Bluff, Neb.
Ill.	Glasford	2 p.m., Apr. 1	Drilling and casing 1,400 ft. well	D. A. Howard, Village Clerk.
Ill.	Rochelle	6 p.m., Apr. 1	Electric driven pumping machinery	W. D. McHenry, Mayor.
O.	Cincinnati	Noon, Apr. 1	Cleaning cast iron pipe and valves and doing miscellaneous work on water system	C. F. Hornberger, Dir. Public Service.
S. D.	Beresford	6 p.m., Apr. 3	Air compressor and power pump	Frank Bruehler, City Aud.
Pa.	Norristown	3 p.m., Apr. 3	Concrete surfacing of reservoir	W. W. Hibbert, Engr., Hale Bldg., Philadelphia.
N. D.	Langdon	2 p.m., Apr. 3	Drilling and casing 6-in. well	Ole J. Eide, County Auditor.
Mass.	Boston	Noon, Apr. 3	Laying 3,180 ft. 8 to 12-in. water pipe	E. F. Murphy, Comr. Public Wks.
Ill.	Utica	8 p.m., Apr. 4	60,000 gal. elevated steel tank	L. N. Sabo, City Clerk.
S. D.	Columbia	Apr. 4	700 tons c. i. pipe, valves and hydrants	John McNeal, City Engineer.
Kan.	Greensburg	Apr. 4	Constructing water works, cost \$30,000	O. H. Landrith, City Clerk.
La.	Davenport	2 p.m., Apr. 4	Water and sewer services for 1916	J. W. Crowley, Comr. P. Wks.
O.	Cleveland	Noon, Apr. 5	Stop cock boxes	Comr. of Pur. & Supplies.
N. Y.	New York	2 p.m., Apr. 5	Connecting water and fire mains	Wm. Williams, Comr. W. S. G. & E.
H. S.	Halifax	Apr. 5	5,000 ft. c-i. pipe	F. W. Doane, City Engr.
Ore.	Bandon	7.30 p.m., Apr. 5	Pipe, fittings, valves and hydrants	J. S. Sawyer, City Engineer.
Kan.	Meade	6 p.m., Apr. 5	Reinforced concrete reservoir, 40x24	E. E. Innis, City Clerk.
Minn.	Duluth	11 a.m., Apr. 7	40-in. steel supply main, including creek crossing	W. H. Borgen, City Clerk.
Tenn.	Lenoir City	Noon, Apr. 8	Repairs to Water works plant	W. U. Shipley, City Recorder.
D. C.	Washington	Apr. 8	Steel and iron pipe, castings and lead pipe	General Purchasing Officer, Panama Canal
Md.	Indian Head	Apr. 8	High pressure system at Naval Proving Grounds	Bureau of Yards and Docks, Navy Dept., Wash., D. C.
O.	Euclid	Noon, Apr. 10	Constructing 6 and 8-in. water mains	F. A. Pease Engineering Co., Marshall Bldg.
Va.	S. Boston	Apr. 10	Filter plant building, coagulating basin, pumping station, etc.	Anderson & Christie, Engrs., Charlotte, N. C.
La.	Fort Dodge	Apr. 10	Sinking well	W. L. Tang, City Clerk.
Ala.	Florence	noon, Apr. 10	Constructing filtration plant complete	C. E. Jordan, Comr. Pub. Prop.
O.	Youngstown	10 a.m., Apr. 10	About 600 ft. concrete and c. i. pipe, 12 to 30-in.	F. H. Vogan, Clk. Co. Comrs.
Ont.	Collinwood	8 p.m., Apr. 11	Motor driven pumps and pump well	Water & Light Commission.
Ont.	Toronto	Noon, Apr. 11	Electrically operated driving gear for 36-in. valves	Works Department, City Hall.
N. Y.	Ilion	2 p.m., Apr. 11	Covered filter beds, clear water basin and control house with piping, etc.	J. D. Ringwood, City Engr.
Wis.	Hayward	Apr. 11	50,000 gals. steel tank and tower and two pumps	Village Clerk.
Ark.	Rector	8 p.m., Apr. 11	5 miles 4 to 8-in. c-i. pipe line, pumping station, valves, tower, tank and hydrants	F. L. Wilcox, Engr., Syndicate Trust Bldg., So. L. Mo.
Mont.	Three Forks	5 p.m., Apr. 12	Installing water works system, including water mains and concrete reservoir	Village Clerk.
Ida.	Berger	10 a.m., Apr. 12	Excavating and lining 400-bbl. cistern	J. H. Smith, City Engineer, Boise.
Va.	Blackstone	3 p.m., Apr. 14	9,000 ft. 4-in. c. i. pipe, 60,000 gal. steel tank, pumps, oil engines, etc.	R. B. Stone, Clerk of Council.
S. C.	Charleston	6 a.m., Apr. 14	Furnishing iron pipe and castings for 1916	J. H. Dingle, City Engr.
Minn.	Gemmill	2 p.m., Apr. 15	Drilling a deep well	Bd. of Education, Dist. No. 2.
Minn.	Silver Lake	8 p.m., Apr. 16	Constructing waterworks system	Bernard Pawlak, City Rec.
Neb.	Norfolk	Apr. 17	Extending water mains and system	P. F. Stafford, City Clerk
S. D.	Lake Norden	10 a.m., Apr. 18	Waterworks and electric light and power system, complete	R. C. Byrde.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
MISCELLANEOUS				
Texas, Cuero	.....4 p.m., Apr.	3..	100,000 cu. yds. dirt excavation on drainage work.....	Walter Reiffert, Ch. Comm.
N. Y., Long Is. City	...11 a.m., Apr.	3..	Disposing of garbage, rubbish and ashes.....	M. E. Connolly, Boro. Pres.
O., Cincinnati	.....Noon, Apr.	3..	Underfeed stoker equipment at pumping station.....	C. F. Hornberger, Dir. Public Service.
N. Y., New York	.....noon, Apr.	3..	Furnishing tractors, trailers, motors and generators, paper trucks, 55 ash compartments and 20 dust and rubbish containers	J. T. Fetherston, Comr. Street Cleaning.
Pa., S. Bethlehem	.....8 p.m., Apr.	3..	Removing ashes, garbage and rubbish.....	Thos. Ganey, Boro Secy.
N. Y., Dunkirk	.....Apr.	4..	Sweeping and sprinkling streets for five years.....	City Engineer.
Del., Wilmington	.....Noon, Apr.	4..	Placing concrete in counter weight pits of bridge.....	James Wilson, Co. Engr.
Miss., Clarksdale	.....Apr.	4..	12-ton garbage incinerator.....	M. W. Purnell, City Clerk.
Wash., Chehalis	.....Apr.	5..	10,000 bbls. Portland cement	D. W. Montfort, Co. Auditor.
D. C., Washington	.....Apr.	6..	Copper cable	General Purchasing Officer, Panama Canal
D. C., Washington	.....2 p.m., Apr.	6..	Quarrying and crushing trap rock.....	Purchasing Officer, District Bldg.
D. C., Washington	.....3 p.m., Apr.	6..	Constructing postoffice at Elkins, W. Va.	J. A. Wetmore, Acting Superv. Architect.
Fla., Jacksonville	.....Noon, Apr.	8..	Constructing marginal wharf.....	J. C. O'Dell, General Manager, Realty Bldg.
N. Y., New York	.....11 a.m., Apr.	11..	Heating system in Kensico gate chambers	Board of Water Supply.
Ky., Louisville	.....Apr.	15..	Portland cement	U. S. Engineer's Office

STREETS AND ROADS

Phoenix, Ariz.—City attorney has been instructed to prepare ordinance for paving of North Central Ave.

Alameda, Cal.—Adoption of plans and specifications for permanent improvements of Central Ave. from Fernside Blvd. to Fourth St. will be considered by city council. Work is to cost \$100,000. Wynn Meredith, Thomas J. Allan, Maurice Couchot and George L. Dillman, local engineers, have volunteered their services to council in selecting plans and specifications.

Los Angeles, Cal.—Ordinances have been adopted changing the grade of several streets.

Los Angeles, Cal.—City Engineer instructed to pave Third St. from Grand Ave. to Bunker Hill Ave. with concrete 5 ins. thick and to establish curb line on westerly side of Van Ness Ave. from Clinton St. to Temple St, 56 ft. westerly from and parallel with easterly line of said street.

Oak Park, Cal.—Notices calling attention to ordering up of Madrone Ave. from Lower Stockton road to 37th St. have been posted along that street. Work calls for concrete curb, gutters and sidewalks, asphalt pavement with concrete base and all necessary drains.

Oroville, Cal.—Chamber of Commerce at meeting Mar. 16 passed a resolution endorsing the proposed \$15,000,000 State highway bond issue, and assuring State Highway Commission that local Chamber will do all it can to aid in passing of bonds. Resolution further stated that State Highway Commission has pledged itself to build lateral from Oroville to Quincy in event bonds carry.

Fresno, Cal.—California Development Board, in quarterly convention here, opened campaign for carrying \$15,000,000 highway bond issue at November election. Convention by unanimous vote passed resolution endorsing bond issue and recommending favorable consideration at hands of executive committee of development board.

Santa Ana, Cal.—County Highway Commission is to make two maps and two reports upon which to base public discussion. It was decided that one report should pre-suppose bond issue of not over \$350,000. Of that amount it was suggested that \$140,000 be expended on coast highway, \$50,000 in finishing paving of the Santa Ana Canyon, and remainder to be distributed in third and fourth supervisorial districts and near first supervisorial district, where roads would be of the greatest advantage to the county. Coast highway work would be included in this report were not decided upon. Other report is to pre-suppose bond issue of \$800,000, with an expenditure of \$240,000 upon coast boulevard. That report will include approximately all of the roads asked for by various sections so far and some roads not yet listed.

Sacramento, Cal.—With sale of last of state highway bonds Mar. 15 highway commission has \$2,489,000, according to State Treasurer Richardson, with which to complete work in California under \$18,000,000 bond issue. State board of control bought for a premium of \$1,400

to-day last \$1,500,000 worth of bonds, sale of which was announced some weeks ago to E. H. Rollins & Sons, but subsequently canceled because of an irregularity in advertising for bids. Highway commission has a balance of \$989,000, most of which is already contracted for. The \$1,500,000 sold to-day is to be used by commission without restrictions as to place. First \$500,000 was bid in for \$250, the second \$500,000 for \$200, while there was some lively bidding for last \$500,000, which brought a premium of \$950. Capital National Bank of this city, Byrne & McDonnell, E. H. Rollins & Sons and the board of control were bidders. State board made a clear profit of \$7,000 in two weeks' time by speculating in bonds.

Sacramento, Cal.—City commission has adopted resolutions for improvement of Bonita Ave. and several other streets.

Stockton, Cal.—Ordinance has been passed appropriating \$5,000 for repairs on asphalt pavements.

Waterbury, Conn.—Bids on oil for the streets, to the amount of 175,000 gallons were received as follows: Hedrick Good Foods Construction Co., specification B, .0648; John Baker, Jr., specification B, .0689; specification A, .0649; Walter Cushing, specification, .0725; Indian Refinery Co., specification B, .0950; Emerald Petroleum Co., specification B, .0805, rejected, no certified check; Ottawa Refinery Co., specification B, .0612, specification A, .0687. The bid last year was .0344.

Washington, D. C.—American consular officer in Venezuela writes that man in his district desires to communicate with American importers of asphalt. It is stated that man can supply asphalt of almost any grade and in almost any quantity, loaded on board schooners near the mines, for \$10 per ton. Correspondence should be in Spanish. (No. 20541).

Fort Meade, Fla.—Town has voted in favor of bond issue in sum of \$7,000 to complete brick pavement on Broadway.

Panama City, Fla.—City Commissioners have sold \$20,000 of improvement bonds and work will be started on city wharf and the streets at an early date.

Columbus, Ga.—Military highway from Atlanta to Pensacola, so constructed that large guns and war equipment could be carried over it, is suggestion of Julian Lane, road engineer for Muscogee County. Road would come by Columbus. Muscogee engineer says that suggested military road should be constructed of standard paving materials and that all bridges on the route should be of substantial concrete construction.

Thomasville, Ga.—As Thomasville people feel that it is imperative for them to have an outlet south for Dixie highway it has been decided to put roads both to Tallahassee and Monticello in good condition, so that automobilists can take either. Monticello and Madison have agreed upon route between those two cities and are building it, and if the Tallahassee people fail to construct a road to connect with Florida points further south via Monticello, there will at least be route through Monticello. In this way there seems a certainty of two routes from Thomasville, as Tallahassee will without doubt build a route even if it does not go via Monticello. Chairman Merrill and Vice-Chairman

Cooper of Thomasville council of Dixie Highway went before county commissioners this week and stated situation and they agreed to have both roads put in fine condition.

Boise City, Ida.—County Commissioners of Boise county, Idaho, have provided \$200,000 bond issue to finance construction of more good roads in that section this year, according to J. J. Johnson, vice president of Boise National Bank.

Alton, Ill.—Madison County Board of Supervisors rejected report of special committee appointed to devise ways and means of submitting to vote of people question of issuing \$1,250,000 in bonds for hard roads. There is possibility the subject may be brought up again before new Board of Supervisors.

Chicago Heights, Ill.—Commissioner William Busse said Commissioners would have \$218,000 of state money to spend on roads in the county this year, and that they would take care of piece of road at Blue Island, and other places in Hazelcrest and Homewood, and then come as far along toward county line on Chicago road as possible. It is intended to put in substantial and ornamental bridge at 14th St., with 26-ft. roadway and a passageway on either side for pedestrians. Design will leave place for Lincoln highway markers, which will be erected by Lincoln Highway Association.

Lynnville, Ill.—Town has voted in favor of bond issue of \$32,500 for road improvement.

Mt. Morris, Ill.—Town has voted in favor of bond issue in sum of \$25,000 for road improvement.

Ottawa, Ill.—Proposition of F. W. Mathieson, La Salle zinc manufacturer, the Chicago Portland Cement Co. and the township of Deer Park to pay the county's share for construction of hard road two and three-quarter miles in length, extending from Vermillion river bridge east to Four Corners south of Utica, was accepted Mar. 17 by board of supervisors, by a vote of 36 to 15. Construction of this highway will cost \$40,000 or \$45,000 one-half of which will be paid by state. Proposed road will be constructed of concrete and will be 18 ft. wide.

Pine Creek, Ill.—Town has voted in favor of bond issue of \$28,000 for road improvement.

Streator, Ill.—Report of the state aid road committee was made at county road meeting and committee, or rather majority of the committee, recommended improvement of Deer Park Rd. with a concrete surface 18 ft. wide, improvement of road to come in regular order following work in Bruce, Brookfield, Fall River, Ottawa, Otter Creek and Hope townships. Deer Park Rd. proposition is for 2 3/4 miles of road, which will connect Deer Park with Starved Rock. Improvement will not cost the county one cent, as county's share will be met by funds given by Mr. Mathieson, of La Salle.

Brazil, Ind.—Council considering purchase of combination sweeper which has big circular broom sweeper enclosed so that dust is picked up and placed into covered receptacle.

Etna Green, Ind.—Town has voted in favor of construction of good roads and will have six miles of gravel road 14 ins. deep.

Hartford City, Ind.—Residents of west end of Commercial St. are circulating petition seeking to have that thoroughfare bricked from Walnut St. on west. Besides pavement of street with brick, cement sidewalks on both sides are sought in petition.

Indianapolis, Ind.—Movement is on foot for paving on Fairfield Ave.

La Porte, Ind.—City will soon buy a modern street sweeper.

Muncie, Ind.—Four road bond issues were sold by County Treasurer. Delaware National Bank was successful bidder on following issues: Morris Rd., \$5,200, premium \$94; Pittenger Rd., \$7,360, premium \$133; Myers Rd., \$3,500, premium \$63. The J. F. Wilde Co., of Indianapolis, was high bidder on \$10,400 issue for Gray Rd. at a premium of \$201.

Marshalltown, Ia.—Council has passed resolution of necessity for 30 blocks and 9,600 ft of Lincoln Highway of paving estimated 63,000 sq. yds. and 25,000 ft. of curbing. Objections to be met April 24. Bids will probably be opened May 8. W. H. Steiner is City Engineer.

Nevada, Ia.—Nevada is going to improve six main roads leading into town. Separate committee of Commercial club has been appointed to take charge of each road, and good results are expected.

Newton, Kans.—Ordinance has been adopted providing for curbing and guttering on Broadway.

Bardonia, Ky.—On March 28 Fiscal Court will advertise for bids for improvement under State aid of six miles of Bardonia and Elizabethtown pike, next to Hardin county line; of three miles of Bardonia and Springfield pike next to Bardonia and Taylorsville pike, next to Spencer county line, and about another mile of new construction of Lebanon Rd., in addition to that already under contract. About 225 miles of other pike has been contracted for substantial maintenance work during the year, and one crusher is now in operation and the contractor under State aid is awaiting orders from the State Commissioner to begin under his present contracts.

Franklin, Ky.—Floyd County Council, in session in New Albany, appropriated \$42,000 for improvement of public highways in Franklin and Georgetown townships. River road and Georgetown and Edwardsville road will be improved.

Hopkinsville, Ky.—Christian County has voted \$400,000 bond issue for good roads by a majority of 3,127. With this money, it is estimated that more than 200 miles of pike can be reconstructed and about 50 miles of new pike built. All work will be done under state-aid law, by which one-half of cost will be refunded out of state road fund. This also secures state and government supervision in letting contracts and construction of roads. Already J. A. Whitaker, government road engineer for this district, has been assigned to make survey of roads of county and advise in improvements.

Lexington, Ky.—\$300,000 worth of good roads bonds offered at public auction by Fayette county Mar. 15 were sold to Security Trust Co., of this city, which takes them at 4 1/2 per cent. on an interest basis of 4.23 to county.

Lexington, Ky.—Ordinance has been passed directing Mayor to issue and sell Rose lane, Rose St. to Woodland Ave., improvement bonds in sum of \$3,180.85.

Pineville, Ky.—Petitions asking that election be called May 13, to vote on proposition of issuing \$150,000 in bonds for purpose of building roads and bridges have been filed in County Court, and County Judge T. J. Asher has entered an order calling election for date named in petitions.

Independence, La.—Road district No. 3 has voted in favor of bond issue of \$110,000 for good roads purposes.

Athol, Mass.—Town has voted appropriation of \$5,000 for permanent roads and \$5,000 for sidewalks and repairs.

Beverly, Mass.—Aldermen at special meeting held recently passed order carrying with it appropriation of \$50,000 for street and sidewalk work, principally in central portion of city.

Boston, Mass.—As soon as first frost is out of ground public works department will begin construction of 85 streets under \$800,000 appropriation of last year. These are streets passed upon by street commissioners after public hearings, and form only part of work laid out with

money available from last year's budget. So. Boston, East Boston, Brighton, West Roxbury, Dorchester, Roxbury and city proper figure in the list. All streets will be supplied with pavement other than macadam, it being mayor's policy to do no more work with macadam, though other forms of street construction are much more expensive. Streets will be advertised in a few weeks, it being likely that 30 or more contractors will be engaged, though public works department will do much work with its own force.

Boston, Mass.—Laying of tracks on Pleasant St. by Elevated Co. formally came before City Council at session Mar. 21 by request of Councillor Kenny, who secured passage of resolution asking the company to apply for permission to extend its service in accordance with special act of the Legislature just passed. Act for widening of Pleasant St. provided that company share cost of construction with the city. New act lays no such burden on the company.

Clinton, Mass.—City will buy stone crusher and motor.

Haverhill, Mass.—Town has voted appropriation of \$2,000 for new macadam road on King St.

Lynn, Mass.—City contemplates bond issue of \$100,000 for street paving.

Springfield, Mass.—All street improvements recommended by Board of Public Works last year were authorized by the Board of Supervisors at recent meeting on condition that abutters on streets pay for putting in curbstones. Streets to be improved are Bartlett, Center (Indian Orchard), College, Chapel, Genesee, Gordon, Long Hill, Marshall, Orchard, Sheford and Washington.

Springfield, Mass.—See "Sewerage."

Lansing, Mich.—Reported that approximately 2,650 miles of roads will be built during the year. Of this, 1,000 miles will be built by counties under old reward system, 650 miles by townships in same manner and approximately 1,000 miles by property owners under Covert act, passed by the 1915 legislature. No figures are obtainable as to exact amount that will be spent for roads under Covert act. Up to present time 44 out of 55 counties under county road system have reported to State Highway Commissioner Frank F. Rogers. They report available for their roads \$3,231,000, while townships so far reporting have a total of \$1,400,000 to spend.

Sault Ste Marie, Mich.—Board of public works has recommended paving and resurfacing on several streets.

Albert Lea, Minn.—According to figures given out, \$33,000 will be expended on roads in Steele County this season. Of this sum \$7,000 will be expended for maintenance and balance on new roads.

Duluth, Minn.—Reported that Council will reject all bids on paving for East Superior St. and readvertise.

Faribault, Minn.—It is expected that \$115,000 will be spent in various parts of Rice County for good roads this year. Of this amount county receives \$117,000 from state highway commission. This is an increase of \$1,500 over that of last year. County will receive more than \$40,000 from a 3-mill tax.

St. Paul, Minn.—See "Sewerage."

St. Paul, Minn.—Minnesota will improve more than 3,000 miles of road at an aggregate cost of \$7,453,451, according to figures prepared in office of Geo. W. Cooley, state engineer of Minnesota highway commission. More than 1,000 miles will be graveled, and more than 2,000 graded. These figures were ob-

tained by Mr. Cooley through total in state apportionment, amount of county road and bridge levies, and sum spent last year by townships. Of total, about \$4,000,000 will be used under supervision of the highway commission. Besides amount raised from taxation, Winona County is planning bond issue of \$500,000 to be spent on roads and bridges. St. Louis County is planning \$618,000 worth of work. Redwood County will do a record amount of graveled. Ramsey County will spend \$120,000 and Hennepin \$200,000. Sixty-one of 86 counties in state have sent figures to highway commission of amount of work they will do. This includes a total of 1,371 miles of grading.

Moorhead, Miss.—Special election will be held shortly to vote on bond issue of \$1,000,000 for roads.

Carthage, Mo.—City engineer was instructed to prepare plans and specifications for paving South Main St. with asphalt macadam.

St. Joseph, Mo.—Board will purchase street flushers shortly.

Billings, Mont.—Sealed proposals will be received by County Commissioners of Yellowstone County until April 17 at office of county clerk at Billings, for bonds in sum of \$175,000, proceeds of which will be used for building approximately 47 miles of macadamized public highway in county. F. E. Williams is County Clerk.

Butte, Mont.—Movement is on foot to pave Broadway with asphalt or bitulithic material. Other improvement districts proposed were in Conona addition, where grading, curbing and sidewalk are proposed; in Warren & Kingsbury addition, where sanitary and sewer system is proposed; in Ironclad addition and in the Rowe addition, where it is proposed to put in sanitary sewers and concrete sidewalks.

Omaha, Neb.—Voters of Douglas County will have an opportunity on April 18, date of primary election, of passing upon two propositions for bond issues for good roads. One is for issuance of \$200,000 of road grading bonds, and the other provides for \$1,500,000 of bonds for laying of about 75 miles of hard-surfaced roads in several different sections of county. Proposed hard-surfaced roads are to include repaving of all roads now paved with macadam, Lincoln Highway across the country to Valley, military road, including strip between Omaha and Benson; West Q St. and several of shorter roads north and south.

Bayonne, N. J.—Commissioners have ordered ordinances advertised for bids returnable April 11 for improvement of 20 streets of city.

Milville, N. J.—Road committee of Cumberland County Board of Freeholders contemplating construction of three new county and state highways.

Albany, N. Y.—Ordinance passed appropriating \$14,000 for improving Mail St.

Albany, N. Y.—See "Miscellaneous."

Albany, N. Y.—Common Council has directed city treasurer to sell to Harris, Forbes & Co., of New York, through its local representative, J. Stanley Davis, an issue of \$39,500 in serial paving bonds and certificate of indebtedness for \$7,000, both to bear 4 1/2 per cent interest. The city was allowed premium of \$850. Bond issue is to pay for the paving to be done this summer, and the certificate is to meet expense of curbing.

Albany, N. Y.—Assembly by vote of 85 to 50 passed Maier bill, designed to appropriate \$1,928,000 to aid in repair and improvement of town highways along routes of State highways.

Northampton, Pa.—Following bids were received Mar. 2 for street work during year ending Jan. 1, 1917:

	Schaeffer & Ackerman.	Allentown Const. Co.	A. R. Hawk	Miller & Son.
Concrete street crossings, per sq. ft.....	\$0.22	\$0.28	\$0.17	\$0.16
Concrete curb and gutter, per lin. ft.....	0.75	0.90	0.44	0.40
Cement sidewalks, per sq. ft.....	0.14	0.15	0.11	0.10
Earth Excavation for curb & sidewalks per cu. yd.....	0.75	0.60	0.45	0.40
Furnace Slag Concrete sub-base 5 in. thick, per sq. yd.....	1.10	0.98	0.70	0.85
Street Grading, per cu. yd.....	1.00	0.70	0.50	0.48
Concrete Street Paving—6 in. at sides—7 1/2 in. at middle—Kahn Armor plates with 6-13-074 Kahn Road mesh and Carey Jts.....	1.59	1.48	1.45	1.46
Contract awarded to Monroes Miller & Son, of Northampton, Pa. Lewis J. H. Grossart is Town Engineer.				

Boonville, N. Y.—Village voted in favor of proposition to pave Post St. at cost of \$14,000.

Brooklyn, N. Y.—Board of Estimate and Apportionment will be urged to adopt resolutions calling for opening of South Eighth Ave., Whitestone, from Fourth St. through to Broadway, Flushing, connecting with Boerum Ave. Resolution also calls for the widening of the avenue from Whitestone to Flushing to a width of 70 ft.

Dunkirk, N. Y.—Bids will be called for shortly for work on permanent improvement of Chautauqua county highways.

Syracuse, N. Y.—Plans have been approved for South Onondaga road. Cost will be \$5,300. County Supervisors in charge.

Waterloo, N. Y.—Village has voted in favor of proposition to pave West Main and Virginia Sts.

Shelby, N. C.—In addition to white way, which is a certainty, city fathers have laid plans for asphalt or bitulithic pavement on principal streets of business section. Co-operation of property owners, highway commissioners of No. 6 township and county commissioners is being sought, and if plan goes through as city fathers anticipate it will, something like 12 blocks of paving will be laid.

Thomasville, N. C.—Number of citizens have signed petition addressed to county commissioners of Guilford county, asking commissioners to build proposed High Point-Greensboro road, where old road is now situated instead of by Guilford college, as is proposed.

Cincinnati, O.—Election will be held April 25th to vote on following bond issues for resurfacing, improving and widening of streets: \$39,750 for Harrison Ave.; \$120,800 for Central Ave.; \$251,250 for Hamilton Ave.; \$142,500 for Madison Rd.; \$175,000 for Quebec Rd.; \$459,750 for Eastern Ave.; \$142,500 for Ludlow Ave.; \$151,500 for Fairbanks Ave.; \$50,000 for Grandin Rd.

Cincinnati, O.—Election will be held April 25th to vote on bond issue of \$105,000 for resurfacing, improving and widening Freeman Ave.

Cleveland, O.—Starting early with highway improvements this year, State Superintendent Clinton Cowen April 7 will let 42 contracts covering more than 94 miles, total estimated cost of which is \$1,465,784.07. As rapidly as possible other awards will be made to get work under way as rapidly as funds are available. Mr. Cowen plans to have completed this year at least 500 miles of new paving, and he wants to repair at least 1,000 miles of roads that can be made first class for travel.

Lima, O.—Contract for \$40,000 concrete road between Lima and Allentown, distance of 3½ miles, was cancelled by county commissioners Mar. 18. Brick road to cost approximately \$7,000 more will be built instead. New contract will be let soon by commissioners. Work is expected to begin in July. Henry S. Enck held original contract for improving Allentown Rd. with concrete pavement. He still holds contract for improving half mile of road in the city of Lima. Work on that part of road, on which concrete is to be laid 18 ft. wide, will begin at once.

Salem, O.—Council has passed ordinance for improvement of E. 7th St. by grading and paving.

Sandusky, O.—Full assurance that Erie county will receive sufficient funds from State Highway Department to insure building of four miles of pike on Columbus-Sandusky market road in Perkins and Grotton townships is given by Division Engineer E. C. Blosser. State will contribute close to \$10,000 toward improvement with county and townships making up balance.

Springfield, O.—Sealed proposals will be received at office of city auditor of city of Springfield, O., until 12 o'clock, noon, April 3, 1916, for purchase of bonds of said city aggregating \$15,391 in amount, and issued in anticipation of collection of deferred installments of special assessments heretofore levied for following street improvements: Main St. paving, Spring to Yellow Springs St., \$9,159; High St. paving, Limestone to Wittenberg Ave., \$3,458; Limestone St. paving, Main to Washington St., \$2,774. W. J. Barrett is city auditor.

Tiffin, O.—A. C. Blosser, district engineer of state highway department, was in city Mar. 17 for purpose of conferring relative to reconstruction of portion of main market road north of city. It appears that if proper co-operation of trustees, commissioners and abutting property owners can be secured, 4 miles

of this road leading north of city can be reconstructed and placed in shape to be taken over by state to be by it kept in repair hereafter. Of this 3 miles would be in Clinton township and 1 mile in Pleasant township.

Toledo, O.—Arrangements were completed Mar. 17 for improvement of Raymer Blvd. from Starr Ave. to the Ravine. Following conference with Welfare Commissioner William Beatty, it was decided that city should do grading and property owners pay for paving.

Urbana, O.—By unanimous vote ordinance has been passed under suspension of rules to improve Hill St. from Main St. to eastern end of street, by constructing concrete sidewalks, curbs and gutters and by placing gravel on street.

Blackwell, Okla.—Plans, specifications and estimates for paving with vitrified brick blocks 21 blocks in business and residence district have been adopted by City Council. The Benham Engineering Co., of Oklahoma City, Okla., are consulting engineers for city. Approximate cost of work \$110,000.

Eugene, Ore.—Council has adopted recommendation for sidewalk on south side of Second Ave. west.

Hazleton, Pa.—Council will consider bond issue of \$150,000 for improving streets and sewer system.

Media, Pa.—Members of Supervisors and Commissioners' Association of Delaware County went on record Mar. 20 favoring proposed \$50,000,000 loan bill for improvements of roads in this State, which is to be brought up in next session of Legislature. William P. Hipple, secretary of association, offered resolution favoring loan bill, which was unanimously adopted.

Newport, R. I.—State Board of Public Roads plans to construct 23 miles of bituminous roads this year in addition to maintaining some of the most necessary water-bound macadam roads now in existence. Present bituminous roads also will be maintained, and water-bound macadam will be oiled. It is estimated by State Treasurer that 3-cent tax rate will bring in from \$210,000 to \$215,000. Automobile money can also be used by Board, making total this year of approximately \$400,000. Oiling this year, declared absolutely necessary, will cost about \$40,000. Board expects to advertise for construction contracts about the middle of April.

Providence, R. I.—The board of public roads is making preliminary plans for work of year, and with money received from 3 cent additional state tax which Assembly has voted expects to construct 23 miles of bituminous road this season, in addition to maintaining some of most necessary waterbound macadam roads now in existence. Board will advertise for construction contracts about middle of April.

McLaughlin, S. D.—Appropriation of \$18,000 has been made by National Congress to provide for federal road from Solon, Morton County, North Dakota, and this point, by way of Fort Yates Indian agency. This road is to be used for military and other purposes.

Clarksville, Tenn.—City is in the market for Mexican road oil. S. R. Alexander is city engineer.

Knoxville, Tenn.—Commissioners have ordered 100 sidewalks to be repaired at once. Owners of this property will be given 15 days to make repairs. If they have not done necessary work at expiration of time limit city has authority to repair walk, assessing property owner for amount due.

Knoxville, Tenn.—County extension of Texas Ave. will be macadamized announced Knox county road commission subsequent to conference Mar. 15. Three short roads at Fountain City will also be macadamized.

Blooming Grove, Tex.—It has been mutually agreed that Blooming Grove and Frost go in together and hold one election to vote on road bonds. It is still figured that Blooming Grove's part will be about \$50,000 or \$60,000 and rate will be 40 or 50 cts. on \$1.00.

Cooper, Tex.—Commissioners' court of Delta county has ordered election to be held April 29 for purpose of voting on bond issue of \$200,000 for road building in Precinct No. 1.

Dallas, Tex.—Opening of Cabell St. from its present terminus to Commerce St. was requested of Board of City Commissioners Mar. 15 in petition filed by 50 property owners. It was referred to Committee of whole.

El Paso, Tex.—Property owners on mesa are desirous of immediate action looking to construction of portion of proposed scenic drive. In petition present-

ed to City Council Mar. 16 plan was outlined for commencement of work. Petition was referred to Council as a whole.

Gilmer, Tex.—Commissioners' Court of Upshur County has called election for \$300,000 bonds in road district No. 2, to be held April 18.

Greenville, Tex.—By practically unanimous vote Hunt County Good Roads Association decided to request election of Commissioners' Court for bond issue of \$1,000,000 for purpose of constructing 180 miles of additional good roads in Hunt County, and it was voted to commence campaign at once to further movement.

Houston, Tex.—County Commissioners have ordered additional \$260,000 to be raised by issuance of road warrants, payable serially, the proceeds to be divided among Precincts Nos. 2, 3 and 4 for road improvement.

McKinney, Tex.—Another paving contract for four miles of paving will soon be let in McKinney.

Pittsburg, Tex.—Precinct 1 of Camp County approved good roads bond issue of \$100,000 by vote of 685 to 72.

Somerville, Tex.—Petition of Somerville citizens has been granted for road bond election and same has been called for April 28; \$100,000 will be the issue and about 27 miles of roads into Somerville are contemplated.

Brigham, Utah.—City is planning to build concrete thoroughfare through its limits at expenditure of several thousand dollars.

Murray, Utah.—Notice that state highway commission has officially designated state road through Murray City as state highway was given to county commission by E. R. Morgan, state road engineer. This means, it is stated, that state may join with county and city of Murray in carrying concrete pavement on state road through the City of Murray. Mr. Morgan advised commission that 14th South has not yet been designated as state highway. There is now before highway commission request that it be designated as such and paved with concrete from State to Pleasant Green.

Salt Lake City, Utah.—Petitions for the paving of Center St. from 2d North to 5th North, and 7th East from 5th South to 9th South were filed with the city recorder by residents on the streets.

Salt Lake City, Utah.—By action of city commission recorder is authorized to advertise notice of intention to resurface 1st South from West Temple to State, and State from 1st South to 4th South. Upon advice of city engineer commission decided not to attempt to use old stone blocks on side of streets as base for resurfacing, but will pay abutting property owners 2 cts. each for blocks and sell them for what can be gotten for them.

Norfolk, Va.—Prominent residents of Kempsville district, Princess Anne County, will petition Judge B. D. White to call election for a \$150,000 bond issue for improvement of roads in district. Under law the judge is required to call an election for bond issue if as many as 50 freeholders sign petition.

Norfolk, Va.—Mayor Mayo has signed number of ordinances and resolutions adopted by Council. Among them were the following: Petition for improvement of Raleigh Ave. and Matoaka St. with resolution making an appropriation of \$588.50. Resolution setting aside a portion of Lafayette Park for use as a playground for athletic teams. Resolution to provide for certain sewers in Berkley Ward from balance of \$10,000 appropriation. Ordinance making appropriations for improvements to Westover Ave. and other streets in Madison Ward. Resolution to appropriate \$615 for sewerage on 41st St. between Parker and Powhattan Aves.

Hilliard, Wash.—Resolution was presented by chamber of commerce to county commissioners Mar. 15 endorsing Hilliard-Whitworth college road and petitioning commissioners to act favorably.

Montesano, Wash.—Following bids have been received for road construction: Oliver & Oliver, Portland, Ore., at \$24,000; Nels Johnson, Hoquiam, Wash., at \$24,331.30; Rowland Bros., Cosmopolis, Wash., at \$26,800; Aug. Wallin, Aberdeen, Wash., at \$28,198. Contract provides for clearing and grading 16,388 ft. and gravel surfacing 22,248 ft., width of grade 20 ft. and of gravel 12 ft. Quantities: clearing, 17 acres; grubbing, 13.7 acres; 12 in. tile, 950 lin. ft.; cedar log culverts, 4,180 ft. of logs; grading 21,466 cu. yds.; gravel surface, 7,415 cu. yds. Geo. D. Robertson is County Engineer.

Spokane, Wash.—Irregularities in bids

on 24th Ave. paving job from Howard to Bernard St. has resulted in calling for second bids. City council Mar. 17 concurred in recommendation of Commissioner Funk to reopen bids.

Spokane, Wash.—Board of County Commissioners approved appropriation of \$40,000 for building of last section of Inland Empire permanent highway from Spokane to northern boundary of county. Road to be built starts at Deer Park, running to northern boundary, and is known as section 13B. County Engineer will be instructed to prepare specifications and estimates of cost of construction of road.

Walla Walla, Wash.—Commissioners considering resolution for approximately 50,000 sq. yds. of paving, making total length of over six miles.

Appleton, Wis.—Following bids were received Mar. 24 for 9,629 sq. yds. of brick, concrete and asphalt pavements, on 5-in. concrete base: Greunke Bros., Appleton, Wis., for brick pavement at \$2.19 per sq. yd., total \$21,087; Garvey & Weyenberg, Appleton, Wis., for concrete at \$1.59, total \$15,310.11; White Construction Co., Milwaukee, Wis., for asphalt at \$2.15, total \$19,350. Grading included in bids given. A. C. Remley is City Engineer.

Janesville, Wis.—Resolution has been passed for paving Oakland Ave. with asphaltic concrete and for curbing and guttering same.

Janesville, Wis.—Council considering paving of South Franklin St. with macadam or concrete. Petition calls for macadam, but Council is in favor of permanent street.

Janesville, Wis.—Council has advertised for bids on street oil.

Milwaukee, Wis.—Decided that standing committee on streets should be instructed to wait upon members of board of public works asking that improvements be made in 27th St. from Jackson to Duncan Sts.; in 22d St. from Seneca to Mitchell Ave.; in 22d St. from Duncan to Pacific Sts.

Pleasant Prairie, Wis.—Proposition to issue bonds in sum of \$90,000 to complete concrete roads on all state highways in Pleasant Prairie will be voted on at coming election.

Rice Lake, Wis.—Council has ordered investigation of plant to oil streets and providing necessary equipment therefor.

CONTRACTS AWARDED.

Birmingham, Ala.—Contract has been awarded to Hinkel & Sullivan, Cincinnati, O., for speedway around lake of Birmingham Motor and Country Club at expenditure of \$500,000.

Douglas, Ariz.—To Warren Bros. Co., for paving at approximately \$100,000.

Miami, Ariz.—Contract for 8 miles of road between Winkelman and Christmas was let by County Board of Supervisors to Toohy & Johnson, of Phoenix, for \$100,282.55. Other bidders were Contractor Thorson of Kansas City and Michaelson & Barclay of Globe.

Phoenix, Ariz.—City Commission has awarded contract for paving of Washington St. from Seventh Ave. to 17th Ave., and 17th Ave. from Jefferson St. to Adams St., to California-Arizona Asphalt Construction Co. Tarvia asphalt macadam was selected, bid of successful concern being \$1.24 per sq. yd.

Goshen, Ind.—For paving with Trinidad natural lake asphalt on 6-in. concrete foundation, to S. S. Saxton, Richmond, Ind., at \$1.56 paving per sq. yd., 40 cts. excavation total \$46,516.12. W. A. Books is city clerk.

Indianapolis, Ind.—Board awarded contract for completion of Burdsal parkway to Timberlake Construction Co. on bid of \$27,960.

Muncie, Ind.—County commissioners have awarded contract for construction of two county roads. O. R. Davison road on county line between Henry and Delaware county was awarded to I. G. Johnson at \$11,980. John Madill road was awarded to firm of Carey & Miller at \$9,740.

Richmond, Ind.—Two large road graders have been purchased by county commissioners to be used by highway department. Graders were obtained from J. D. Adams & Co. of Indianapolis at cost of \$215 each.

Tell City, Ind.—City council has awarded contract for construction of combined curb and gutter of concrete along nine blocks on Main St., including catch basins, inlets and street crossings, to Traylor & Krempf, of Jasper, Ind.

Creston, Ia.—Contracts for paving and curbing awarded as follows: To Jas. Hor-

rabin & Co., Des Moines, Ia., for 45,000 yds. bitulithic at \$1.89 per sq. yd.; Young Bros. Const. Co., St. Joseph, Mo., for 25,000 yds. Hassam at \$1.60; Dearborn Const. Co., Waterloo, Ia., for 12,000 ft. curb at 35 cts., 42,000 ft. comb. curb & Gutter at 60 cts., 2,000 yds. alley pavement at \$1.45. Theo. S. De Lay is Consulting Engineer.

Forest City, Ia.—Contract awarded to J. S. McLaughlin & Sons for 20,000 yds. sheet asphalt paving at \$1.66 and 16,762 lin. ft. curb and gutter at 58 cts. per ft. Low bids were as follows: Dearborn Const. Co., Waterloo, Ia., at \$1.29 per yd. for concrete paving; Ford Paving Co., Cedar Rapids, Ia., at \$1.84 per yd. for natural lake asphalt; Dearborn Const. Co., at \$1.93 per ft. for sand filler, armor-ing per lin. ft., 15 cts. Theo. S. De Lay is Consulting Engineer, Creston, Ia.

Elizabethtown, Ky.—City Council contracted with Goodwin Brown & Co., of Upton, to furnish 2,000 yards of crushed rock to be used in constructing and repairing streets of Elizabethtown. Work will begin at once. Contract price is 75 cts. per yd.

Lancaster, Ky.—Woodward Bros., of Jesamine county secured contracts for state-aid reconstruction of Danville and Crab Orchard pikes, in Lincoln county.

Alexandria, La.—See "Bridges."

Middleton, Mass.—Contract has been awarded to David J. Sheehan Co., Lynn, Mass., for road between this town and North Andover.

Duluth, Minn.—Rogers & McLean have been awarded contract to improve First St., from 20th to 13th Ave. west, with brick pavement, on their bid of \$63,257.20.

St. Cloud, Minn.—For 35,862 sq. yds. paving with creosote block, 17,353 sq. yds. paving with bitulithic, to General Contracting Co. Geo. G. Magnuson is city clerk.

Hastings, Neb.—To Watts & Amerman, Salina, Kans., for 150,000 yds. sheet asphalt pavement, and 90,000 lin. ft. combined curb and gutter, at following bid: Part Trinidad asphalt, at \$1.54; part Texaco asphalt, at \$1.46, and combined curb and guttering at 46 cts. per ft. W. H. Fuller is engineer.

Flemington, N. J.—For 2.8 miles macadam road to Sigafos & Poore, Riegelville, Pa., at \$37,852.14. Other bidders were: Richards & Gaston, New York, N. Y., at \$41,542.22; E. P. Arbogast, Stroudsburg, Pa., at \$41,821.50; J. C. Bentley, Hackensack, N. J., at \$42,062.64. Grant Davis is engineer, Whitehouse Station.

Chicago Junction, Ohio.—For grading, curbing and paving portions of Maple and Woodbine Sts. to Johnson & Ritz, Defiance, at \$20,991. E. K. Morris is City Clerk.

Harrisburg, Pa.—Following contracts have been awarded by the State Highway Department on bids opened Mar. 16 for road materials: To Bellefonte Lime Co., Bellefonte, Pa., limestone ballast, \$1.23 to \$1.60 per ton; screenings, \$1.23 to \$1.60 per ton. Bessemer Lime Stone Co., Youngstown, O., screenings, \$1.02 to \$1.12. Birdsboro Stone Co., Philadelphia, trap ballast, \$1.14 to \$1.46; screenings, \$1.14 to \$1.46. Booth & Flinn, Ltd., Pittsburgh, limestone ballast and screenings, \$1.21. Branchton Limestone Co., Mercer, Pa., limestone ballast and screenings, \$1.25. Buffalo Cement Co., Buffalo, N. Y., ballast and screenings, \$1.19. Clydesdale Brick & Stone Co., Pittsburgh, limestone ballast, \$1.31 to \$1.80; screenings, \$1.31 to \$1.54. Conewago Trap Rock Co., Williamsport, Pa., limestone ballast, \$1.49; screenings, \$1.34. Duncanville Lime & Limestone Co., Duncansville, Pa., limestone ballast and screenings, \$1.25. General Crushed Stone Co., Easton, Pa., ¾ and 1½-in. quartzite, 92 cts. to \$1.17; screenings, 92 cts. to \$1.17. Hartley-Eichelberger Co., York, ¾-in. limestone, \$1.33; Hillside Stone Co., Pittsburgh, limestone ballast, \$1.20 to \$1.41; screenings, \$1.20 to \$1.41. Keystone Trap Rock Co., Lancaster, Pa., ¾-in. trap, \$1.38; Lambertville Stone Quarry Co., Philadelphia, ballast and screenings, \$1.30. J. C. McSpadden, Rockwood, Pa., ballast, \$1.12 to \$1.38; 1½-in., \$1.28 to \$1.33; screenings, \$1.12 to \$1.38; A. V. Purnell, Pittsburgh, ballast, \$1.33; 1½-in., \$1.53; Seaman, Irwin & Brenneman, Pittsburgh, ballast and screenings, \$1.19. C. H. Ziegenfuss Co., Inc., Allentown, limestone ballast, \$1.04; screenings, \$1.14. All prices are per ton. Variation in prices of bidder is caused by delivery are various points. Contracts awarded Mar. 21 were as follows: American Lime & Stone Co., Tyrone, Pa., limestone ballast, 55 cts. to 97 cts.; ¾-in.,

\$1.13; screenings, 55 cts. to 97 cts. Bellefonte Lime Co., limestone ballast and screenings, \$1.23. Bessemer Limestone Co., limestone ballast, \$1.02. Birdsboro Stone Co., trap ballast and screenings, \$1.32. Booth & Flinn, Ltd., limestone ballast, \$1.19 to \$1.25; 1½-in., \$1.21 to \$1.57; screenings, \$1.16 to \$1.32; Branchton Limestone Co., limestone ballast, \$1.09; Buffalo Cement Co., ballast, screenings and ¾-in. limestone, \$1.75. Clydesdale Brick & Stone Co., limestone ballast, \$1.49; 1½-in., \$1.43; ¾-in., \$1.35; screenings, \$1.49. Conewago Trap Rock Co., 1½-in. limestone, \$1.07; screenings, \$1.1. Daniel Custer & Son, Johnstown, Pa., limestone ballast, 87 cts. to \$1.08; screenings 82 cts. to \$1.03. General Crushed Stone Co., quartzite ballast and screenings, \$1.23; trap ballast and screenings, 95 cts. to \$1.35. Hartley-Eichelberger Co., ¾-in. limestone, \$1.10 to \$1.26; ballast and screenings, \$1.10. Hillside Stone Co., Pittsburgh, limestone ballast, \$1.16 to \$1.33; 1½-in., \$1.18 to \$1.36; screenings, \$1.16 to \$1.33. Interstate Stone Co., trap ballast, \$1.16; screenings, \$1.11. Monroe Paving Co., Shamokin, Pa., sandstone ballast, \$1.18; 1½-in., \$1.07; screenings, \$1.02 to \$1.18. George C. Souder, Lancaster, Pa., limestone ballast and screenings, \$1.31. Storb Crushed Stone Co., Pottstown, Pa., trap ballast and screenings, \$1.28. Whiterock Quarries, Bellefonte, Pa., ¾-in. limestone, \$1.65. March 16 awards for stone chips and pea gravel were: Birdsboro Stone Co., trap chips, \$1.16 to \$2. Conewago Trap Rock Co., trap chips, \$1.12 to \$1.54. John T. Dyer Quarry Co., Norristown, Pa., trap chips, \$1.42. Lambertville Stone Quarry Co., trap chips, \$1.45 to \$1.48. J. Joseph McHugh, Philadelphia, \$1.68. Monroe Paving Co., trap chips, \$1.23. Henry Steers Sand & Gravel Co., N. Y., \$1.47 to \$1.83. Wyoming Sand & Stone Co., Wilkes-Barre, 97 cts. to \$2.20. March 21 awards for pea gravel and stone chips were: J. K. Davidson & Bro., Pittsburgh, pea gravel, 82 cts. to \$2.21. Downing Sand & Gravel Co., Erie, Pa., pea gravel, \$1.02 to \$1.39; Iron City Sand Co., Pittsburgh, pea gravel, \$1.08 to \$1.16. Nickle Plate Gravel Co., Erie, pea gravel, 72 cts. to \$1. Rodgers Sand Co., Pittsburgh, pea gravel, \$1.30 to \$1.90.

Philadelphia, Pa.—For furnishing crushed trap rock for country roads to Birdsboro Stone Co., at \$70,180; also for furnishing trap rock chips for bituminous roads at \$7,000.

Uniontown, Pa.—For paving 4 miles of road in Georges Township to Percy D. Coats & Co., at \$75,000.

Newport, R. I.—Bids were opened Mar. 16 for trap rock, 12,000 cu. yds. Haverstraw Co. explained that increased price was due to cost of scow chartering, dynamite, coal and labor. It claimed to be producing about half trap rock sold. Other bidders had nothing but figures to submit to board. J. K. Sullivan, lowest received contract. Bids were as follows: Haverstraw Crushed Stone Co., \$1.95; J. K. Sullivan, \$1.60; J. P. Sullivan, \$1.68; New Haven Trap Rock Co., \$2.15; by rail, \$1.92. Bids for laying year's quota of granolithic sidewalks, to be done by Aug. 1, were opened and award was made to J. P. Sullivan & Son, lowest bidder. They were, per square yard: John Sullivan, 89 cts.; J. P. Sullivan & Sons, 86 cts.; Darling Slade Construction Co., \$1.05; Hector M. Henery, 94 cts.; Alexander J. Fludder, 68½ cts.

Manitowoc, Wis.—Contracts for paving on 6-in. concrete foundation have been let as follows: For four blocks of asphalt to Rasmussen & Sons Co., Oshkosh, Wis., at \$1.72 per yd.; 10,732 yds.; 9 blocks of vitrified blocks let to Murphy Const. Co., Manitowoc, Wis., at \$2.08½ per yd., 17,920 yds. Harry F. Kelley is City Attorney.

SEWERAGE

Los Angeles, Cal.—City engineer instructed to prepare plans and specifications for construction of Wilton Place drain and Wilton Place storm drain No. 2.

Waterbury, Conn.—D. M. Havican accompanied his petition for 250 ft. of sewer on Merrill St. from Robbins St. going east, to board of works meeting and presented proposition whereby if city will build sewer he will pay for the expense involved in constructing it. Matter was referred to committee on sewers.

Washington, D. C.—See "Water Supply."

Jacksonville, Fla.—Recommendations of Sewer Committee in regard to specifications for new sewers were approved and Acting Chairman Gustav Muller was au-

thorized to advertise for material, labor and labor and material. There are three ways in which contractor can bid. This work will be done with the bond money recently voted for sewers and drains. Total amount of work to be done under first issue will amount to about \$250,000.

Savannah, Ga.—City Mar. 16 sold a \$400,000 issue of bonds at \$101 1-8. Money is to be used to extend municipal house drainage system. Entire issue was taken by Robinson-Humphries-Wardlaw Co., of Atlanta. They draw 4 1/2 per cent. interest.

Sioux City, Ia.—Following bids were received for 1,350 ft. 42-in. concrete storm sewer: F. T. Lieder at \$4.17, total \$6,323; Cady & Savonelle at \$4.75, total \$6,949; Devlin & West at \$3.28, total \$4,986; Joe Pickus at \$4.28, total \$6,505; Ward & Weighton at \$3.70, total \$5,502. Contract includes 4 manholes, \$35.00, and 12 catch basins, \$30.00. T. H. Johnson is City Engineer.

Lexington, Ky.—Ordinances have been passed for construction of sanitary sewers in West Short St., North Broadway, Davidson Court, Elsmere Park and North Upper St.

Louisville, Ky.—Residents of Beechmont, Oakdale and Southern Heights sections are petitioning for aid in constructing septic tanks.

Hagerstown, Md.—Act has been approved by the House providing for establishment of sewerage system and disposal plant for this city, and authorizing bond issue not exceeding \$750,000 for same.

Clinton, Mass.—Appropriation of \$4,500 made for sewer construction.

Lynn, Mass.—City contemplates bond issue of \$30,000 for drainage construction.

Springfield, Mass.—Town will advertise for bids for furnishing sewer brick, sewer pipe, granite, granite curbing and granite block.

Waltham, Mass.—Mayor has urged need of better drainage on lower Main St. and will not approve any order for rebuilding of street until problem has been solved.

Olivia, Minn.—Following bids were opened Mar. 20 for ditches: Carl Christiansen, Litchfield, Minn., for No. 69, at \$750. No. 65 at \$17,843. No. 68 at \$11,000; F. Desemoux, Mankato, Minn., for No. 65 at \$18,186.33. No. 68 at \$11,900.49; Kircher Bros., St. Paul, for No. 65 at \$17,950. No. 68 at \$11,750; Niels L. Nielson, Fulda, Minn., for No. 65 at \$18,654.25. No. 68 at \$10,934. No. 33 at \$2,730.20 (tile); C. Sorenson, Slayton, Minn., for No. 65 at \$18,165. No. 68, at \$10,950; Hector Coolsack, Marshall, Minn., for No. 65 at \$18,200; Hansen & Christiansen, Northwood, Ia., for No. 65 at \$18,650. No. 68 at \$11,350; O. M. Anderson, Somers, Ia., for No. 68 at \$11,136.98; Fred Bisballo, Florence, Minn., for No. 68 at \$11,814; M. J. Dowling, Olivia, Minn., for No. 68 at \$10,700; Bulard Bros., Montevideo, Minn., for No. 69, at \$725.52, for No. 33 at \$3,069.04 (tile); C. E. Brown, Litchfield, Minn., for No. 33 at \$12,002.94 (open). J. L. Johnson is Co. Auditor.

St. Paul, Minn.—Preliminary orders have been passed by council for following improvements: Constructing sewer on Eva St., from Fairfield Ave. to point 25 ft. south of south line of Fillmore Ave. Constructing relief sewer on Capitol Ave., from Fry St. to Sheldon Ave., and on Minnehaha St., from Fry St. to Sheldon Ave., and Snelling Ave., from Van Buren St. to Capitol Ave. Constructing sewer on Charlton St., from Wyoming St. to Belmont Ave. Grading Otis Ave., from Marshall Ave. to Laurel Ave.; Montrose St., from Dayton Ave. to Laurel Ave., and Marlboro St., from Marshall Ave. to Dayton Ave.

Butte, Mont.—See "Streets and Roads."
Omaha, Neb.—City Commissioners Hummel and Jarline are getting together on establishment of lagoon in Fontenelle park. Improvement to cost approximately \$26,650. Sewer work, which comes within Mr. Jardine's department, will cost \$20,405 and must be completed before lagoon excavation shall be started. There will be 2,600 ft. of sewer, extending on two sides of lagoon in a Y shape. Excavation will require the removal of 25,000 yards of earth. Water will have an average depth of six feet. This improvement will provide bathing in summer time and skating in winter. Work will be started this spring. Water area will be four acres and clump of trees inside of lagoon will add to scenic beauties of park.

Bayonne, N. J.—Ordinances have been introduced providing for laying of sewers, water pipe and gas connection in several streets.

Akron, N. Y.—Voters here defeated proposition to spend \$30,000 for sewer system.

Albany, N. Y.—Ordinance introduced for sewer in Ontario St.

Albany, N. Y.—Ordinance authorizing laying of sewer in Ontario St. will come up for final passage April 3.

Albany, N. Y.—See "Miscellaneous."

Binghamton, N. Y.—Ordinance has been adopted approving plans for Macon St. sewer and ordering construction.

Binghamton, N. Y.—City Engineer W. Earl Weller and Deputy City Engineer Arthur La Roche have returned from Albany, where they had gone with plans of intercepting sewer system to obtain approval of State Department of Health. Engineer Theodore B. Horton of department inspected plans and gave them his unofficial approval. Health Commissioner Biggs was absent but it was arranged that city officials should go ahead with plans as presented and send to State Department of Health complete set of detailed plans. These would be approved Mar. 23 and city will be in position to go ahead with work. Plans already have been approved by State Conservation Commission. Bonds have been sold and it is expected money will be in the hands of city treasurer at once so that at meeting of Board of Contract on Mar. 29 secretary can be directed to advertise for proposals for construction of system. These advertisements will run until April 19 when bids will be received.

Camden, N. Y.—\$10,000 appropriation for sewer improvement was approved by majority of two votes, although first reported lost.

Lockport, N. Y.—Proposition to abolish separate sewer and water boards and merge them into one board has carried.

Oriskany, N. Y.—At election held Mar. 21 village voted in favor of bond issue in sum of \$40,000 for sanitary sewer system.

Oswego, N. Y.—Following low bids were opened Mar. 24 for 1900 ft. 8-in. vitrified tile: M. Barbar, Binghamton, N. Y., at 74 cts. per ft. for tile, 60 cts. for Y and T branches, total \$1,716.00; Jas. Fennel, Oswego, N. Y., at 80 cts. and 40 cts. respectively, total \$1,859; R. F. Kelly, Oswego, N. Y., at 83 cts. and 55 cts. respectively, total \$1,886; Mondo Const. Co., Syracuse, N. Y., at \$1 and 45 cts. respectively, total \$2,231. Extra for rock excavation \$3 per cu. yd.—manholes, \$45—flush ends, \$15. J. F. Flanagan is City Engineer.

Scotia, N. Y.—Town has voted in favor of construction of sanitary sewer.

Waterloo, N. Y.—Village has voted in favor of repairing Cox sewer at cost of \$3,000.

Watertown, N. Y.—City engineer has been directed to prepare plans for new sanitary sewer on Bronson St. between High and Rutland. Public hearing set for April 7. It was determined to lay sanitary sewer in Howk St. southerly from Coffeen St. and that public hearing be held on matter April 7. It was also voted that public hearing on matter of sewer between Franklin and Salina be held April 7. Board voted to advertise for bids for sanitary sewers in Lawrence and Sill Sts. All bids must be in the hands of the city engineer by April 7.

Winston-Salem, N. C.—Secretary Holcomb furnishes following as list of sewer extensions recommended by sewer committee of board of aldermen for immediate construction, appropriations for which passed its first reading at last meeting of the board: "A" St. from Green St. to Carter St.; Carter St. from "A" St. to Branch St.; Vine St. from Seventh St. to Fifth St.; Fifth St. from Vine St. east to outfall; 15th. from Patterson Ave. to off-set; 14th. from Patterson Ave. to off-set; Patterson Ave. from outfall near 13th St. to 15th St.; Hospital St.; Trade St. from outfall sewer near 13th St. to Elgith; Wachovia St. from Marshall to Broad; Apple St. from Green to outfall; Washington Ave. from Marshall to Ash; Hunter Ave. from Granville Place to Bank.

Conchoeton, O.—Council has approved resolution to construct sanitary sewer and storm sewer in Chestnut St.

Urbana, O.—Ordinance for construction of storm sewer from Church St. to Scioto St. along line of the present ditch was given second reading and left with committee.

Blackwell, Okla.—See "Water Supply."
Tulsa, Okla.—Sewers to be constructed this year as covered by budget are as follows: Storm drainage—Owen Park, \$8,-

000; Cat Creek, \$12,800; Lindsey Addition, \$7,000; Elwood Ave., \$2,500; east side storm water system, \$56,000; total, \$86,300. Sanitary system—Brady St. for "Little Africa," \$2,500; 17th St. for Maple Ridge and Morningside, \$2,700; 11th St. for Orchard Pl. and Bellevue, \$5,400; 16th St. for Oakdale, \$1,200; Park Hill, \$1,000; total, \$12,800.

Harrisburg, Pa.—According to report received from officers of Keystone State Fair and Industrial Exposition Co. at Harrisburg, work on sewerage system and drainage of entire fair grounds west of town will probably be started by April 1. Contracts for work are almost completed and will be let shortly.

Hazleton, Pa.—See "Streets and Roads."
Lebanon, Pa.—P. A. Volcker, City Engineer, is making plans for storm sewers estimated to cost \$100,000.

Philadelphia, Pa.—Having received approval of State Department of Health for plans, the Department of Public Works will advertise shortly for bids for the construction of upper section of the proposed Frankfort Creek intersecting sewer, first link to be constructed in comprehensive scheme for development of a citywide sewage collection and disposal system. This announcement was made recently by Director George F. Damesman of Department of Public Works. Portion of sewer to be built first will extend from mouth of Wingohocking sewer to the site for grit station, at O St. and Hunting Park Ave. It is estimated that this portion of the work will cost \$250,000. Plans for lower section will be approved by State Department without delay, it is expected, and within week or two bids will be asked for this part of sewer work. There are \$500,000 available for this work from recent loan.

Westerly, R. I.—Special town meeting will be held April 6 to secure passage of an act authorizing town to provide for construction and maintenance of system of public drains or sewers in that portion of town included within boundaries of fire district.

Ogden, Utah.—If stockholders of the Plain City Canal Co. grant Ogden permission to make that canal stream into which proposed Third Ward sewer system will empty, no further difficulty is in way of constructing sewerage district, according to Mayor Abbot R. Heywood. Ogden would establish filtration and septic tanks so that no unsanitary condition will result. Plans of commission will provide for a drainage pipe beneath sewer.

Norfolk, Va.—See "Streets & Roads."
Racine, Wis.—Special assessments for public sewers on several streets have been adopted and hearings set for April 1.

CONTRACTS AWARDED.

Los Angeles, Cal.—To Tony Vranjes for sewer in Park Drive at \$345.

Stockton, Cal.—To Whitlock & Gorrill, San Francisco, at \$15,417, for vitrified pipe sewer in Madison St.

Anna, Ill.—For sewage tank for Anna State Hospital to Hoeffken Bros. Supply & Construction Co., Belleville, Ill. W. S. Shields, 1201 Hartford Bldg., Chicago, is Engineer.

Ackley, Ia.—To Zitterler & Sullivan, Webster City, Ia., at \$16,494, for sewer system and disposal plant for this city.

Kerwood Park, Ia.—To A. C. Brown, Caruthersville, Mo., for sewer construction at following bid: 315.70 ft. 6-in. sewer at 31 cts. per ft.; 9,610 ft. 8-in. sewer at 40 cts. per ft.; 7,820 ft. 10-in. sewer at 50 cts. per ft.; 1,200 ft. 12-in. sewer at 70 cts. per ft.; 1,080 ft. 14-in. sewer at 80 cts. per ft.; 2,760 ft. 18-in. sewer at \$1; total \$29,984.70. Other bidder was R. C. De La Hunt, Cedar Rapids, Ia., at 50, 65, 70, 75, 85 and 95 cts. per ft. respectively; total \$39,718.50. To Marion Concrete Co., Marion, Ia., for two disposal plants at \$8,625. Extra for trench excavation \$3 per cu. yd.; open excavation \$1.60 per cu. yd.; manholes \$40. C. M. Doolittle is Clerk.

Mason City, Ia.—To S. R. Bowen Co., local, for laying 1,000 ft. 8-in. vitrified sewer pipe at following bid: Earth excavation, 47 cts.; loose rock, \$2; hard rock, \$4.75; pipe, 35 cts. per lineal ft.; Y branches, \$1; manholes, \$43. Other bidders were as follows: A. L. Willson Co., at 69 cts., \$2.25, \$6.50, 28 cts., \$1.30 and \$50 respectively; Intermountain Bridge & Construction Co., at 75 cts., \$2.75, \$6, 30 cts., \$1.25 and \$50 respectively. J. H. McEwen is City Clerk.

Union, Ia.—To Cole Bros., Ames, Ia., at 70 cts. per ft. complete for 12,450 ft.

5-in. vitrified clay sewer pipe, 990 ft. 10-in. sewer, total \$9,414. To Ward & Weighthon, Sioux City, Ia., for disposal plant and outlet at \$5,400.

Lexington, Ky.—Congleton Construction Co. was successful bidder for contract for building sanitary sewer on No. Limestone St. from Main to Third, when bids were opened at meeting of board of commissioners Mar. 17. Congleton Co.'s bid, figured on estimated quantities, was \$4,445.75. Their nearest competitor was C. B. McGregor, whose bid, submitted by A. G. McGregor, was \$4,567.50. Other bidders were Carey-Reed Co., \$6,571, and Louis des Cognets & Co., \$6,823.02.

Canby, Minn.—For 950 ft. 6-in. vitrified sewer pipe to George Desmond, Marshall, Minn., at \$712.50. A. Henriksen, Askov, Minn., was bidder at \$807.00. Extra for rock excavation \$2.70 per cu. yd., manholes \$17.50. Material furnished by city. J. H. Gehbaueris, City Engineer.

Jackson, Minn.—Contracts for ditches in Jackson County have been awarded as follows: For Judicial Ditch No. 43 to Stone & Wallace, local, at \$8,148; for Ditch No. 44 to Carey-Kelleher Ditch Co., Pocahontas, Ia., at \$15,047; for Ditch No. 46 to W. L. Sedgley, Worthington, Minn., at \$9,650. Other bidders were as follows: Judicial Ditch No. 43: Boh. J. Chak, Jackson, Minn., \$8,400; Redding & Smaage, Windom, Minn., \$8,835; B. H. Bauman, Heron Lake, Minn., \$8,390; Hansen & Christenson, Northwood, Ia., \$8,655; Carey-Kelleher Ditch Co., Pocahontas, Ia., \$8,604; W. L. Sedgley, Worthington, Minn., \$8,490; W. C. Markland & Co., Fairmont, Minn., \$8,298; Neils L. Nielson, Fulda, Minn., \$9,150. Judicial Ditch No. 44: Redding & Smaage, Windom, Minn., \$16,740; Parrish & Sedgley, Worthington, Minn., \$15,300; Chas. Wing, Brewster, Minn., \$15,454.75; B. H. Bauman, Heron Lake, Minn., \$15,990; Neils Nielson, Fulda, Minn., \$16,295; W. C. Markland & Co., Fairmont, Minn., \$15,458; William Neuman, Lakefield, Minn., \$15,923; Schoel Bros., Worthington, Minn., \$10,839; Hansen & Christensen, Northwood, Ia., \$15,874. Judicial Ditch No. 46: Carey-Kelleher Ditch Co., Pocahontas, Ia., \$10,200; Hansen & Christensen, Northwood, Ia., \$10,856; W. C. Markland & Co., Fairmont, Minn., \$10,250; Wm. Neuman, Lakefield, Minn., \$11,579.

St. Paul, Minn.—Contract for building of Sand Hill ditch in Polk County was let by State Board of Immigration to Koehler Contracting Co. of Frazee. Contract calls for construction of 4 steel bridges, big ditch and a road along one side. Work will cost \$25,880.12.

Anaconda, Mont.—By city for storm sewers to Belts & Bingham, Anaconda, at \$5,614. W. B. Vestal, Jr., is City Engr.

Camden, N. J.—Awards of contracts for sewers were made Mar. 21 at meeting of the street committee of City Council. Contractors W. Penn Corson and estate of Aaron Ward were favored contractors. Contract awarded to Corson calls for six months' work in new Rosedale section. Chain of sewers will be laid in neighborhood of 36th St. and Highland Ave. Work will cover practically whole Rosedale section. Ward concern will build Miller and 29th St. sewers and will lay cement driveway from Park Blvd. to Wildwood Ave., in rear of Princess Ave.

Manassquan, N. J.—Contract for construction of proposed new ocean outlet for boro sewer system was awarded Mar. 14 by Council to Matthews Bros., of Red Bank. This firm presented lowest of four bids received, offering to furnish material and build the outlet according to specifications of Pugh & Hubbard, Boro Engineers, for \$4,443. Pipe will be standard, full weight wrought iron, 10 in. in diameter, and 900 ft. long. Bids were also received on extra heavy grade pipe, Matthews Bros. bidding \$5,784 according to these specifications. Other bids received were as follows, higher price in all cases being for extra heavy pipe: Merritt & Chapman Derrick and Wrecking Co., New York, \$7,170, \$6,200; Helman & Goodman, Jersey City, \$6,000, \$4,900; Jacob G. Newman, Spring Lake, \$6,300, \$5,400.

Montclair, N. J.—For concrete and vitrified pipe storm sewer in Church St., to Alworth Construction Co. Edgar S. Clonson is city engineer.

New York, N. Y.—To Amanna & Sullivan, 24 E. 198th St., New York City, at \$58,295, for constructing sewer in Sackett Ave. for Bronx borough.

Warren, R. I.—For approximately 40,000 ft of 8 to 12-in. pipe sewers, to Yadesernia & Chilson, Franklin, Mass. Charles F. Chase, Providence, is engineer.

Racine, Wis.—Contract has been awarded to Martin Jensen for construction of sewer in Mead St.

WATER SUPPLY

Texarkana, Ark.—Texarkana Water Corporation planning expenditure of \$30,000 for improving plant.

Winslow, Ariz.—Santa Fe Land & Improvement Co., which operates water-pumping plant, supplying water to town of Winslow, was ordered Mar. 15 by corporation commission to install three meters, in order that apportionment of expense between town and railroad might be more definitely arrived at.

Waterbury, Conn.—Petition from Waterbury Tool Co. et al, for water main on East Aurara St. from Waterbury Ave. to New Haven road, was referred to the water department.

Washington, D. C.—Approximately 15,000 tons of Portland cement, 12,000 tons of cast-iron pipe of various sizes (also valves and specials), hydrants, pumps, engines, boilers, piping and fittings, and some electrical equipment will be used in the construction of waterworks and sewerage system at Salto, Uruguay. Filtration and depuration plants will be installed. Contract involves about \$5,000,000, and work is to begin early in April. Correspondence regarding this opportunity should be direct with home office of firm, whose address may be obtained from Bureau of Foreign and Domestic Commerce or its branches. [Ask for file No. 73,690.]

Jacksonville, Fla.—City plans installation of water system. L. E. Murphy is commissioner water works.

Athens, Ga.—Bond election for enlarging and extending of water works system in Athens will be held as soon as details of preparing an ordinance can be compiled.

Virginia, Ill.—Question of water works plant for Virginia is now thought to be definitely settled. S. A. Clark, representing C. P. Brant Drilling Co., of Chicago and Indianapolis, has drilled well to depth of 600 ft., amount of water secured making safe basis for further calculation, it is said. Meeting of Council will be held to provide funds for proposition and arrange for installing of system which will supply needs of city.

Hartford City, Ind.—Hartford City electric service has been granted permission to install two water meters at water works station, in order to test how much water is being pumped there, by steam, at cost expended. It is purpose of electric company to show, if possible, that plant can be operated more cheaply by electricity than by steam.

Indianapolis, Ind.—Chairman Duncan of Commission, said Mar. 16 that he had indicated to city officials in Lake County that proper procedure would follow if they would file petition before public service commission, asking for installation of filtration plant in Lake County Water Co.'s property.

Hampton, Ia.—Petition is being circulated here asking Council to call a special election at which question will be submitted as to whether or not city shall issue bonds in sum of \$25,000 for new equipment and extensions to water works system.

Lawrence, Kan.—By a vote of almost two to one Lawrence decided Mar. 14 to vote bonds for purchasing of water works. After successive attempts to buy plant or build municipal plant town has authorized purchase of works at a cost of \$175,000. Plans for improving plant will begin immediately. Machinery

for filtering and softening water will be installed and mains will be extended in residence districts.

Lawrence, Kan.—City Commission has been requested to submit proposition authorizing bond issue of \$200,000 for extension and improvement of water works system at election April 4.

Mayfield, Ky.—According to decision handed down by Circuit Judge Hunk Gardner in Graves Circuit Court, city of Mayfield has right to issue bonds to buy water and light plant here without vote of the people.

Amite City, La.—Question of water works was discussed at recent meeting of City Council. It is understood that Council approved plans of X. A. Kramer, of Magnolia, Miss., for installation of system of water works at an expenditure of about \$50,000. Election to get the sense of the voters will be held at an early date. It is believed that taxpayers will vote water works.

Monroe, La.—Citizens of West Monroe held meeting Mar. 15 to discuss needed improvements and ways and means to accomplish them. At end of this year a four-mill special tax will expire. Mayor N. G. Tippit favors voting three-mill tax in its place and to provide funds to improve water works and electric light plants and to purchase automobile fire truck.

Haverhill, Mass.—Town has voted appropriation of \$1,000 for laying pipes for installation of water on King St.

Duluth, Minn.—Twenty-eight gas and water main extensions are assured for next summer according to figures prepared by D. A. Reed, manager of water and light department. Including those extensions for which application will be made between now and June 1, Manager Reed expects total of 20 miles to be laid this year. These 28 extensions will cost \$50,195.95, according to Manager Reed.

Wadena, Minn.—The proposition to issue water bonds was carried; that for sewer bonds was lost.

Bayonne, N. J.—Specifications for water mains, sewers, etc., for Humphreys Ave. and for West 57th St., have been ordered drawn and presented to commissioners at earliest possible date.

Bayonne, N. J.—Commissioners have ordered ordinances for water mains on 42d St., from Ave. A to Ave. D, to be advertised.

Albany, N. Y.—Ordinance passed authorizing issue of \$100,000 bonds for waterworks extension.

Batavia, N. Y.—Common council Mar. 21 voted to advertise for bids for construction of modern firehouse on Court St. for paid fire department, bids to be opened on Mar. 28. Bids for filtration plant and improved electric lighting system, for which the taxpayers have voted an appropriation of \$175,000, will be opened on Mar. 30.

Lancaster, N. Y.—Village will vote Mar. 28 on proposition to raise \$1,500 for water extension.

Little Falls, N. Y.—City Engineer Oakley will purchase 20 water meters a month for next 10 months. City is now in market for chlorinator.

Newport, N. Y.—Proposition to bond village for \$1,500 for extension of water main carried at recent election.

Hamilton, O.—Estimated that \$10,000 is needed for water wells and street repairs.

Middletown, O.—Sealed bids will be received at office of City Auditor of Middletown, until 12 o'clock noon, Apr. 14, 1916, for purchase of water works bonds of city of Middletown in aggregate amount of \$40,000. Louis T. Nein is Auditor.

Wallington, N. J.—Following bids for water works were opened Mar. 13:

	8-in. artesian well, 220 lin. ft. per lin. ft.	Alteration to well, 1, complete	Concrete man-holes, 2, per manhole	6-in. w.l. suction pipe, 325 lin. ft. per lin. ft.	6-in. gate valves, 2, per valve	6x6-in. c.l. flanges, 6, per flange
James J. Reilly, Verona, N. J.	\$2.825	\$56.94	\$80.00	\$2.48	\$18.00	\$9.75
Dutcher Artesian Well Co., Dundee Lake, N. J.	3.00	100.00	175.00	7.00	50.00	25.00
N. J. Artesian Well Drilling Co., 576 River St., Paterson, N. J.	2.20	45.00	189.00	1.05	30.00	8.00
Boyd Eng. Co., Inc, 11 Broadway, New York	3.18	170.36	322.50	3.99	18.00	24.80

Blackwell, Okla.—City contemplating making extensive improvements to water, electric light and sewer systems and election will be called immediately to vote bonds in amount of approximately \$60,000, which amount will be necessary in opinion of the Consulting Engineers, The Benham Engineering Co. of Oklahoma City, Okla. It is planned to rebuild water and light plant by installing new boilers and generating units, build intake in river, construct an elaborate white way in business district and build system of storm sewers.

Chester, Pa.—City will extend water main to Wells Crest at cost of \$2,000.

Erie, Pa.—Plans for construction of storage reservoir south of city and those for increasing pumping facilities were outlined to City Water Commissioners Mar. 15 by O. L. Schlumpf, engineer of Fleming-Chester Co., of Pittsburgh. Firm has been engaged several weeks sketching suggestions for improvements. In order that city's water supply cannot be exhausted, although serious accident may hamper pumping of water for several days, Commissioners plan big reservoir just south of the city. Another reservoir and some auxiliary pumps have been recommended by national underwriters, to guard the city against disastrous fires. Contracts for portion of work will be let in spring, when Board will start to enlarge several of the water mains. Commissioners also considered erection of additional offices on water works grounds, 12th and Myrtle Sts.

Erie, Pa.—Commissioners of Water Department discussed routine matters at meeting Mar. 17. Permission was granted for extension of water mains to supply training ship Wolverine at foot of State St., and also to supply water to Julius Michaels, who intends erecting slaughter house just outside city limits. Last will not be made until the spring.

South Bethlehem, Pa.—Ordinance providing water supply for use of borough and its inhabitants by entering into contract with the Bethlehem City Water Co. for 30 years has been passed on second reading.

Providence, R. I.—Board of aldermen Mar. 16 passed water supply board's substitute resolution, authorizing city treasurer to borrow not exceeding \$1,000,000 for expenses on development of new Scituate water supply.

Knoxville, Tenn.—Forty additional fire hydrants may be installed in Knoxville instead of 30, at first planned for, according to J. G. Crumbliss, Commissioner in charge of the Water Department. Plans of present hydrant layout are now being prepared by Chief Sam B. Boyd.

CONTRACTS AWARDED.

Eureka, Cal.—For 1-story pumping station at municipal water works to Elsemore Jacobs at \$11,629. G. A. Strand is City Engineer.

Los Angeles, Cal.—For steel pipe for laterals for Los Angeles Water District No. 3 to Los Angeles Manufacturing Co. at \$251,375. Homer Hamlin is City Engineer.

San Diego, Cal.—To Pacific Pipe & Tank Co., San Francisco, Cal., for furnishing city with 15,200 ft. of 30-in. wood stave pipe.

McRae, Ga.—For water works system, to Steel Products Co., Savannah, Ga.

Laporte, Ind.—Frank J. King of this city has been awarded contract by the board of public works for excavation and back filling of water main trenches for city for year 1916. His bid, which was lowest, was 14½ cts. per lin. ft. and is said to be lowest bid that has been received on this work in a number of years, if in fact so low a bid was ever received before.

Ligonier, Ind.—For furnishing city with 400 water meters to Pittsburgh Meter Co.

DeRidder, La.—To De Jersey & Naff by city for water works construction.

Chisholm, Minn.—To Massillon Iron & Steel Co., Massillon, Ohio, for cast iron pipe at \$31.90.

St. Cloud, Minn.—City Council has instructed Mayor McGibbon and Clerk Cooper to enter into a contract with Central Minnesota Power & Milling Co. for pumping of water and furnishing street lighting for period of five years with privilege on part of the city for extending contract an additional year. New contract will go into effect May 1, 1916. Under proposition of power company, present contract for pumping water is simply renewed, rate remaining at \$2,500 per year.

Crofton, Neb.—For water works extension for village to Schreiber & Peterson, Omaha, Neb., at \$4,896. Work includes 5,686 ft. of 4-in. cast iron pipe at \$0.76 per foot, 13 fire hydrants, 4-in., 2½-in. nozzle, at \$35 each, and 8 gates and boxes at \$15 each.

Atlantic City, N. J.—Contract awarded to Rensselaer Valve Co., Troy, N. Y., for valves for water works at \$10,661. L. Van Gilder is Engr. & Supt. Water Dept.

Passaic, N. J.—Borough Council held meeting Mar. 16 for purpose of advancing proposed water system extensions and improvements. Work was awarded to New Jersey Artesian Well Co., of 576 River St., Paterson, at \$2,035.46. Nearest bid to successful price was \$2,616.28, made by J. J. Riley, of Verona, while bid of Dutcher Artesian Well Co. was \$4,597.

Durham, N. C.—For earth and concrete reservoir, to N. N. Royall, Rocky Mount, at \$37,046.

Athens, O.—For water works system to Charles F. Kircher, at \$28,000. J. R. Sands is City Engr.

Attica, O.—For filtration plant in connection with water works system to Kimes-Olmer Co., Fostoria, at \$9,000.

Cincinnati, O.—For laying water mains in various streets to W. E. Bertch, Cincinnati, at \$37,647. Frank Krug is City Engr.

Cincinnati, O.—For water mains on Strader Ave., to Crumley, Jones & Crumley Co., Cincinnati, at \$19,448. Frank Krug is city engineer.

Corpus Christi, Tex.—At meeting of City Council Mar. 16 proposal of J. C. Hall to sink well in Artesian Park was accepted, his bid being 60 cts. per foot. There were two bids submitted, second being for 65 cts. per foot. Contractor was instructed to start work at once and to complete well just as quickly as possible.

Salt Lake City, Utah.—For 150 miles of vitrified drain pipe for Delta Land and Water Co. to Utah Fire Clay Co.

MISCELLANEOUS

Panama City, Fla.—See "Streets and Roads."

Rome, Ga.—Rome's City Commission Mar. 16 sold \$40,000 worth of 5 per cent. 30-year municipal bonds to Robinson-Humphrey-Wardlaw Co., of Atlanta, for par, accrued interest from date and a premium of \$3,712.25, total of \$43,712.25. There were eight bidders from all parts of the country and lowest premium offered was \$2,052.

Boston, Mass.—Mayor sent several loan orders to City Council, including \$22,112 for remodeling engine 8 headquarters on Salem St., \$25,000 for completion of the Parker Hill playground, \$149,000 for improvement of Savin Hill playground and beach and \$25,000 for North End Park and pier.

Boston, Mass.—Council gave its first reading to an order to borrow \$82,750 for purchase of Hollis property on Allston St., Brighton, for playground. There was much discussion in executive committee whether it was desirable to establish more playgrounds while twenty or more of those now in existence were in bad condition.

Omaha, Neb.—See "Sewerage."

Albany, N. Y.—Mayor Stevens has approved these ordinances: Providing for alteration of city hall; authorizing commissioner of public works to exchange an old automobile for new one, and to

purchase an auto street flusher; fixing the rate of interest on city bonds at 4 per cent; authorizing cleaning, repairs, reconstruction and realignment of Beaver Creek sewer; authorizing construction of a sewer in Kehoe St.; directing improvement of Pennsylvania Ave., between Livingston and Beverly Aves.

Albany, N. Y.—For improving basin at entrance to Erie canal at lock No. 1, this city, Great Lakes Dredge and Dock Co., of Albany, was lowest bidder at \$7,140, when General W. W. Wotherspoon, superintendent of public works, opened four proposals submitted. J. P. Rander-son of this city bid \$7,600. Engineer's estimate was \$9,000. For three other contracts for which bids were opened, lowest bidders were: Completing construction of the canal from Sterling Creek to the Oneida-Herkimer county line, Eastover Construction Co., Inc., of Utica, at \$185,106.50, as against engineer's estimate of \$162,005; Completing reconstruction of highway bridge crossing the main channel of Hudson river at Schuylerville, Spaulding Construction Co., of Suffield, Conn., at \$29,734, as against engineer's estimate of \$31,248.

Albany, N. Y.—Following bids were opened Mar. 14 by State Superintendent of Public Works Wotherspoon for constructing dock wall, an approach to terminal and appertaining structures on east side of Oswego river between Schuyler and Cayuga streets, Oswego. Low bid was submitted by Henry H. Burgard Co., of Buffalo, \$90,984. Other bidders were: Larkin & Sangster, Buffalo, \$93,164.75; Frank L. Cohen, Buffalo, \$200,028.50; Eastover Construction Co., Inc., Utica, \$123,554.85; Scott Bros., Rome, \$95,566.75; H. S. Kerbaugh, Inc., Buffalo, \$91,529.07; T. A. Gillespie Co., Pittsburgh, Pa., \$91,839.95; Morrison & Quinn, Inc., Rochester, \$92,957.75; Walsh Construction Company, Davenport, Ia., \$94,185.50; Lupfer & Remick, Buffalo, \$98,899.10; Troy Public Wks. Co., Utica, \$113,018; Neillands Bros. Construction Co., Buffalo, \$100,484.75; G. C. Hodgson, Fulton, \$99,434, and Day & Zimmerman, Philadelphia, \$104,508.50. Engineer's estimate was \$103,700.

Dunkirk, N. Y.—In accordance with resolution adopted by Common Council at recent meeting, preliminary steps are being taken to take up with United States engineer in this district matter of Congressional appropriation of \$99,000 for clearing away ledge of rock from near harbor entrance. Mayor J. A. Taylor and City Engineer W. H. Shelton will represent city in negotiations.

Las Palmas, Grand Canary.—City is in market for following equipment: One motor fire engine, motor fire truck, salvage corps automobile, and autochemical engine; one stone-crushing machine; one cement mixer; materials needed in construction of central telephone exchange, including iron telephone posts, wiring materials, and points, individual telephone instruments, and machinery for magnetic signals and for central power-supply plant. Prices and descriptions wanted. George K. Stiles, Tenerife, Canary Islands, 17 Consul.

Port Jervis, N. Y.—Adjourned meeting of Common Council was held Mar. 16 to open bids for removal of ashes and garbage from city. There were two bids for removal of ashes. They were as follows: Benjamin E. Cuddeback, \$4,894; William J. Collier, \$4,000. Four bids were read for removal of garbage as follows: Emanuel Drew, \$1,500; Benjamin E. Cuddeback, \$1,644; Hiram Tower, \$1,320; J. M. Elston, \$1,560. Bids were laid upon table until Monday evening, March 27th.

Atlantic City, N. J.—Following bids were received Mar. 9th for cast iron pipe for high pressure fire service:

Materials.	United States Cast Iron Pipe & Foundry Co.		Warren Foundry & Machine Co.		R. D. Wood & Co.		Standard Cast Iron Pipe & Foundry Co.	
	Per ton	Total	Per ton	Total	Per ton	Total	Per ton	Total
1125 tons 20-in. c.i. pipe.....	\$29.75	\$33,468.75	\$29.95	\$33,693.75	\$29.99	\$33,738.75	\$31.10	\$34,987.50
550 tons 12-in. c.i. pipe.....	29.75	16,362.50	29.95	16,472.50	30.49	16,769.50	31.10	17,105.00
18 tons 8-in. c.i. pipe.....	29.75	535.50	30.50	549.00	30.49	548.82	31.10	559.80
15 tons 6-in. c.i. pipe.....	29.75	446.25	30.50	457.50	30.49	457.35	31.10	466.50
9 tons 8-in. flange pipe...	75.00	675.00	76.00	684.00	75.99	683.91	70.00	630.00
100 tons special casting.....	65.00	6,500.00	65.00	6,500.00	66.49	6,649.00	70.00	7,000.00
Total.....		\$57,988.00		\$58,356.75		\$58,847.33		\$60,748.80

Resolution was introduced by Director Bacharach at meeting of Board of Commissioners March 9, 1916, awarding contract to U. S. C. I. Pipe & Foundry Co. for \$57,988. L. Van Gilder, Engineer and Superintendent, Water Dept. of Atlantic City.

An Economical Roadway of Proven Success!

BITOSLAG

**An Asphaltic Concrete Pavement
Manufactured by Special Process in Which
Pulverized Slag is the Principal Mineral Aggregate**

In 1910 there was laid in McKeesport, Pa., an experimental pavement composed of a specially prepared asphalt and a mineral aggregate of finely crushed slag and a good proportion of the usual dust or "filler."

After five years' service under heavy traffic and without any maintenance cost whatever this experimental section remained in an unblemished condition, and proved in the opinion of many engineers and paving experts a roadway that was durable, economical, non-slippery and a most practical and successful method of utilizing a waste product, and at the same time insure those features so essential to the modern highway.

This new and successful pavement, which has received the name of BITOSLAG, can be laid on old macadam, concrete, old brick pavement, rolled broken stone or slag foundation.

The detailed specifications for the BITOSLAG wearing surface to be laid on the various types of base mentioned will be furnished on request. Our laboratories and engineering experts will be pleased to give full information as to preparing the mixture properly and testing same from time to time. This service is free to public officials and contractors to assist them to secure the best possible pavement of this type.

***Correspondence Invited as to
Licenses to Lay this Pavement***

BITOSLAG PAVING COMPANY

90 West Street, New York, N. Y.

Utica, N. Y.—Resolution has been adopted requesting bond issue of \$15,000 for improvement of parks and parkways.

White Plains, N. Y.—Robert A. Pette-son, Controller of Westchester County, has sold \$409,750 issue of Westchester County 4 per cent. bonds for \$414,305 to Bond & Goodwin. The issue is for three separate purposes: Parkway, \$198,000; armory, \$60,000; highway, \$151,760. Bond experts state that price received for these county bonds indicate high standing of Westchester County securities.

Fayetteville, N. C.—Board of Aldermen Mar. 13 unanimously voted to pass provision for purchasing crematory for city over veto of board of audit and finance. Crematory will cost \$4,000.

Cincinnati, O.—Election will be held April 25th to vote on bond issue in sum of \$6,000,000 for construction of rapid transit railway system.

Massillon, O.—Sealed bids will be received until 12 o'clock, noon, April 10, 1916, for purchase of bonds of City of Massillon, O., in sum of \$25,000. Bonds are issued for the purpose of providing necessary funds for improving Sippo Park, and purchasing for park purposes lands known as Oak Knoll Park and improving the same.

Struthers, O.—City will vote April 25 on \$20,000 bond issue for new town hall.

Youngstown, O.—Proposed concrete retaining wall for Ridge Ave. for which a \$5,500 bond issue was authorized by Council Mar. 13, will extend from the bridge to intersection of Pike St., distance of 150 ft. When wall is finished street will be 55 ft. wide and uniform in width.

Dallas, Tex.—Plans have been drawn for pool, 40x100 feet, for Gaston Park, at estimated cost of \$10,000. They will be submitted shortly to Park Board. It is probable that there will be discussion of proposed bond issue of \$250,000 for purchase of block of ground in front of union depot which would be used for parking purposes.

Fort Worth, Tex.—City officials Mar. 16 were taking steps to let other contracting firms know that bids for construction of remainder of conduit probably would be asked soon. Contract, it is said, will be made for either iron pipe or pipe of some grade of concrete. About three miles of conduit remains to be completed.

Galveston, Tex.—As a result of conference Mar. 16 of railroad company executives, county officials and representatives of Citizens' Protective committee, Terry, Cavin & Mills, counsel for Gulf, Colorado & Santa Fe, and Baker, Botts, Parker & Garwood, attorneys for Southern Pacific, were authorized to prepare new causeway contract for submission to county commissioners here and covering permanent rehabilitation of causeway under cost apportionment as follows: Steam railways to pay 45 per cent, or \$675,000 of estimated total of \$1,500,000; Interurban 22 per cent, or \$330,000; county 33 per cent, or \$495,000. Following board of engineers was named to prepare working plans of proposed new causeway work, upon which bids for rehabilitation of the structure may be based: Frank Merritt, representing Santa Fe; E. B. Cushing, Southern Pacific; J. H. Hill, Galveston, Houston and Henderson; Mark Lowd, Galveston-Hous-

ton Interurban, and County Engineer Robert M. Slas.

Salt Lake City, Utah.—Proposition to construct \$100,000 plant in Salt Lake for conversion of city's garbage into fuel, if city will donate a site and deliver garbage, was submitted to city commission in committee of whole recently by J. A. Kirkpatrick, president of Western Nu-Fuel Co., of Kansas City. Matter was taken under consideration by commission. In view of fact that city faces proposition of constructing new incinerating plant at cost of about \$30,000 and is hard pressed for dumping grounds, matter was given considerable attention by commission, but it is to be investigated further before any action will be taken.

Portsmouth, Va.—See "Fire Equipment."

CONTRACTS AWARDED.

West Palm Beach, Fla.—By city for seawall to J. B. Davidson & Co., Little Rock, Ark., at \$49,589.

Niagara Falls, N. Y.—The City Council at recent meeting let contract to Clark Shipston to furnish public service department with fifteen teams for three years at bid of \$4.60 a day of eight hours. When bids were received on Feb. 28, Shipston offered to furnish teams for \$4.40 a day. Since bids were received there has been a big demand for teams. When City Manager Carr endeavored to get teamsters to take the contract at their original bids, they refused. Then Shipston submitted his bid at an increase of 20 cents a day. City manager was directed to purchase 12 second-hand dump wagons for \$115 each.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Ariz., Tempe	Noon, Apr. 1..	Constructing crosswalk	Town Clerk.
N. D., Linton	8 p.m., Apr. 3..	Constructing street crossings and sidewalks	J. G. Meier, City Aud.
Minn., St. Paul	10.30 a.m., Apr. 10..	Grading, curbing and paving with asphaltic concrete	August Hohenstein, Pur. Agt.
D. C., Washington	10 a.m., Apr. 11..	Asphalt blocks for Navy Yard	Samuel McGowan, Paymaster General.
SEWERAGE				
Kan., Topeka	Apr. 1..	Repairing sewage pumping station	City Commissioners.
Minn., St. Paul	10.30 a.m., Apr. 10..	Constructing sewers in several streets	August Hohenstein, Pur. Agt.
WATER SUPPLY.				
Pa., McKeesport	2 p.m., Apr. 3..	Laying 10,000 ft. 24-in. c. l. pipe	J. M. Smith, City Engr.
N. Y., New York	2 p.m., Apr. 7..	Furnishing, delivering and laying water mains	William Williams, Comr. W. S. G. & E.
N. Y., New York	Noon, Apr. 7..	Furnishing metals, pipe valves and fittings	Comr. W. S. G. & E.
Minn., St. Paul	10.30 a.m., Apr. 10..	Drilling and casing 8-in. well	August Hohenstein, Pur. Agt.
Mont., Billings	10 a.m., Apr. 12..	Digging wells, laying mains and building tank and pump station	F. E. Williams, County Clerk.
N. J., Atlantic City	Apr. 13..	Laying 17,500 ft. 8 to 20-in. c.l. pipe and setting 100 hydrants; furnishing and driving 15,000 ft. of piles	L. Van Gilder, Engr., Water Dept.
MISCELLANEOUS				
La., Monroe	Apr. 1..	Summer uniforms for police department	Police Committee.
Minn., Duluth	11 a.m., Apr. 5..	Furnishing playground equipment	W. H. Borgen, City Clerk.
S. C., Charleston	Noon, Apr. 21..	Summer uniforms for police department	J. A. Black, Ch. of Police.

STREETS AND ROADS

Chino, Cal.—Bonds for paving have been voted by citizens in sum of \$73,000.

Miami, Fla.—Everglade road bonds to amount of \$92,500 were sold to Gotter & Sawyer and Fuller & Co., Cincinnati, O., for 97, netting district \$89,725. There was one bid for bonds at \$1,000 premium but firm making the bid did not enclose a certified check. This road district lies entirely within the Everglades. The original bonds issue was for \$165,000 but the balance of the issue will be used for building a road along the bank of Miami Canal after state completes taking out rock from this canal. Money will become available about May 1, when the road work will be commenced.

Springfield, Ill.—City is calling for bids on street flusher and pick-up sweeper.

Indianapolis, Ind.—Resolutions have been adopted for improvement of boulevards near Garfield and Brookside Parks.

Laporte, Ind.—Following bids have

been received for gravel roads and ditch bonds: James Ringer road in Union Township, face and par value of bonds, \$17,600, Salem Bank of Goshen, \$17,956; Breed, Elliott & Harrison, of Indianapolis, \$18,080, high bid; J. F. Wild & Co., Indianapolis, \$18,057.60; Fletcher-American National Bank of Indianapolis, \$18,045.55. George W. Reinhart road in Cass Township, face and par value of bonds, \$3,400—Salem Bank, \$3,571; Elliott & Harrison, \$3,610; R. L. Dollings & Co., Indianapolis, \$3,629.56, high bid; J. F. Wild & Co., \$3,610; Fletcher-American National Bank, \$3,615.55; George W. Reinhart road in Hanna Township, face or par value of bonds, \$1,000—Salem Bank, \$1,020, high bid; Breed, Elliott & Harrison, \$1,001; J. F. Wild & Co., \$1,010.10; Fletcher-American National Bank, \$1,011.25. On all three above sets of bonds, Miller & Co. of Indianapolis bid par with premium on the three of \$500. On Marble Power ditch bonds, face or par value of which is \$3,162.64 there were two bids. Miller & Co. bid par. Contracts have not yet been awarded.

Pineville, Ky.—Petitions asking that an election be called on Saturday, May 13, to vote on the proposition of issuing \$150,000 in bonds for the purpose of building roads and bridges have been filed in the County Court and County Judge T. J. Asher has entered an order calling the election for the date named in the petitions.

Winchester, Ky.—The Board of Council will, on April 7, 1916, offer for sale by sealed bids \$12,580 6 per cent. semi-annual street improvement bonds.

Everett, Mass.—Following bids have been received for road oil and bituminous binders: Atlantic Refining Co., Philadelphia, 6.41 cts. gal., 30, 45, 65%; John Baker, Jr., Boston, No. 30, 6.9 cts., No. 45, 6 1/2 cts.; Alden Speare's Sons Co., Cambridge, Mass., non-asphaltic, 8 1/2 cts., 45%, 6.33 cts., 65%, 6.33 cts.; Headley Good Roads Co., Philadelphia, 25 to 35%, 7.2 cts., 60 to 65%, 6.7 cts., in tank cars to Everett, Mass.; Standard Oil Co., 45%, 8 cts. per gal., 65%, 8 cts., in auto pressure machine on street. Bids under advisement, contract not awarded.

Duluth, Minn.—Minnesota Ave. has

been ordered paved from the end of the present pavement at 38th to the end of the car line at 43d St. The roadway will be improved with concrete to a width of 21 ft. between 38th and 39th Aves. and 15 ft. the remainder of the distance, the engineer's estimate is \$11,-\$21.

Laurel, Miss.—The County Board of Supervisors will begin at once the construction of the Jackson highway, which extends through Jones County, from Sandersville on the north to Eastabuchie on the south, and this road will be completed before October 1.

Moorhead, Miss.—Election will soon be called to vote on issuance of bonds in sum of \$1,000,000 for road improvements.

North Platte, Neb.—City will pave several streets at an estimated cost of \$100,000.

Elizabeth, N. J.—Petition has been put in circulation by property owners asking that section between Seventh St. and First St. be paved, and it is said that there is strong probability that majority of owners will favor move.

Garfield, N. J.—City will grade, curb, pave and construct sidewalks on Hobart Place from Midland Ave. to Lincoln Place.

Newark, N. J.—Bond & Goodwin of New York were awarded \$300,000 issue of temporary paving bonds Mar. 23 by Controller Tyler Parmly. Four bids were received. Low bid was \$2.60.

Rochester, N. Y.—Public improvements to be taken up by Council are as follows: Main St. East cement walks, from Franklin St. and East Ave. to University Ave., \$9,000; Westchester Ave. asphalt pavement, \$24,000; Colonial Road sewer, walks and grading, \$16,000; Ernestine St. grading, walks and sewer, \$4,800; Woodbine Ave. asphalt pavement, \$5,000; Ziegler St. widening, \$3,000; De Witt St. extension, \$900; Lux St. extension, \$1,800.

Bowling Green, O.—Ordinance has been passed providing for improvement of Liberty St. from Main to Vine St. with macadam, concrete or asphalt mixture.

Lima, O.—Forty-nine streets, scattered throughout city, will be improved at a cost of \$589,230.25. To pay the city's share of the cost, which includes street intersections, sewers and water mains, a bond issue of \$100,000 will be presented to the voters at the primary April 25. About \$80,000 of the amount is for the street paving, the rest representing money needed for the repair of streets already paved and the price of a portable asphalt repair plant, needed to keep asphalt streets in good condition. Bonds will soon be sold in sum of \$750,000; \$550,000 to go for construction of reservoir.

Niles, O.—City is planning paving work for early summer.

Toledo, O.—Paving of Bishop St. from Albion to Baxter has been referred to engineer for plans. Ordinance has been approved, requiring straightening of Miami St.

Urbana, O.—City Engineer Sweetman estimates cost of Hill St. improvement \$4,100; of Miami St., \$31,000 and of High St., \$22,500.

Lewisburg, Pa.—Voters of Lewisburg have declared in favor of a borough bond issue of \$20,000 for completion of the paving on Market St. from Fourth St. to Eighth Sts.; the paving of North Second St. to the railroad; North Third St. to the railroad and North Fourth St. to the paving at Five Points; also the building of a storm sewer in Cherry alley from Third St. to the river.

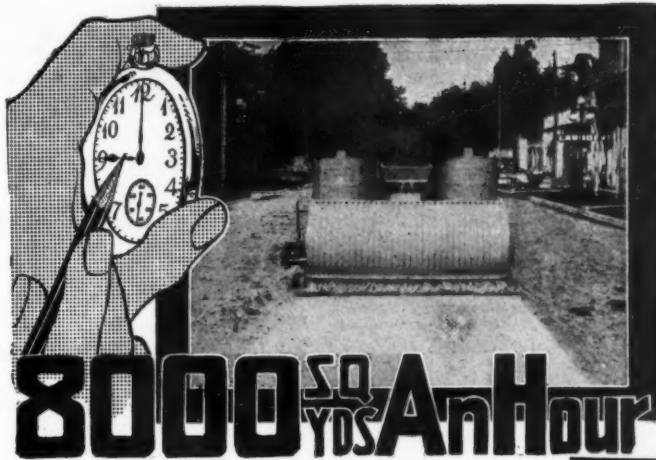
Newport, Tenn.—See "Water Supply."

Amarillo, Tex.—See "Sewerage."

Corpus Christi, Tex.—Surveys are being made by Commercial Club for road along Padre Island. May build 6 miles of macadam.

Ogden, Utah.—Several miles of state and county highway in Weber County will be macadamized and treated with oil in connection with the extensive road building activity to be undertaken this spring. Moroni Skeen is highway commissioner.

Racine, Wis.—Following bids were received Mar. 25 for paving: Paving Asylum Ave., Washington Ave. to 20th St., James Cape & Sons, paving sq. yd., \$2.19; curb and gutter, 60 cts.; gutter, 30 cts. Conductive Paving Co., Forest Park, Ill., paving, \$2.05; curb and gutter, 52 cts. Birdsall-Griffith Construction Co., paving, \$2.15; curb and gutter, 60 cts.; gutter, 30 cts. Western Improvement Co., paving, \$2.10; curb and gutter, 59 cts.; gutter, 30 cts. Bids referred to Common Council. Paving Jones St., West Sixth St. South, Western Improvement Co.,



8000 SQ YDS An Hour

The broom sweeps a swath nearly **seven feet wide**. Team averaging two miles an hour, sweeps 64 thousand sq. yds. in an 8-hour day. Some speed—what?

BAKER DUSTLESS SWEEPER
PICK-UP
Cuts Sweeping Costs

RAISES NO DUST

Carries an economical needle-spray to moisten the litter. When this is used, we guarantee a dustless job. It's the sweeper for real, downright sanitary efficiency—good for a long term of service—an A1 investment. Write for catalog to The Baker Mfg. Co., 535 Stanford Ave., Springfield, Ill. New York - Baker-Barrow, Inc., 221 West Broadway

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PROPOSALS

OFFICE OF THE STATE COMMISSION OF HIGHWAYS.

Albany, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster Street, Albany, N. Y., at 1 o'clock P. M., on Thursday, the 20th day of April, 1916, for the improvement of the highways in the following counties:

ONONDAGA (two highways—2.40, 5.12);
SARATOGA (approx. 5.74);
ULSTER (approx. 0.49);

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the offices of the division engineers in whose divisions the roads are to be improved. The addresses of the division engineers and the counties in which they are in charge will be furnished on request.

The especial attention of bidders is called to "GENERAL INFORMATION FOR BIDDERS" in the itemized proposal, specifications and contract agreement.

EDWIN DUFFEY,
Commissioner.

I. J. MORRIS,
Secretary.

NOTICE TO CONTRACTORS

DEPARTMENT OF PUBLIC WORKS
South Bend, Indiana.

PAVEMENTS

Notice is hereby given that sealed proposals will be received by the Department of Public Works of the City of South Bend, Indiana, up to 10:00 A. M. of the 4th day of April, 1916.

27,916 sq. yds. of pavement on Michigan Street. Bids will be received on following types of pavement: Asphalt, Creosoted Wooden Blocks, Brick, Bitulithic on a 7-inch Portland cement concrete foundation.

34,050 sq. yds. of pavement on Indiana Avenue. Bids will be received on the following types of pavement: Brick, Asphalt, Asphaltic Concrete or Bitulithic laid on a five-inch cement concrete foundation.

Complete drawings and specifications of said work are now on file in the office of the Department of Public Works in the City Hall of South Bend, Indiana.

BOARD OF PUBLIC WORKS,
E. M. MORRIS,
A. H. RICE
JOHN B. WEBER

VERONICA C. SWEENEY, Clerk.

INVITATION FOR PROPOSALS.

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., March 15, 1916.—SEALED PROPOSALS will be opened in this office at 3 p. m., May 8, 1916, for the construction of the United States Post Office at Elkins, W. Va. Drawings and specifications may be obtained from the Custodian of the site at Elkins, W. Va., or at this office, in the discretion of the Supervising Architect. Drawings and specifications will be ready for delivery after March 27, 1916. Jas. A. Wetmore, Acting Supervising Architect.

FOR SALE Voting Machines

Five Abbott Voting Machines in perfect condition. City cannot use owing to change having been made in voting precincts. Will sell or trade for other city equipment. These machines are good and simple to operate, insuring accurate count of ballots the moment the polls are closed, doing away with half the usual number of Clerks and Inspectors at elections.

Write City Clerk, care of Municipal Journal.

FOR SALE

One "OO" Austin Trenching Machine with ten-foot extension, nearly new. Address J. E. Poin-dexter, Receiver, Fayetteville, Tennessee.

FOR SALE CHEAP

Wrought Pipe, second hand, all sizes, recut and rethreaded suitable for all classes of work. Prices quoted on application.

MARINE METAL & SUPPLY CO
167 South Street, New York City

FOR SALE

Complete Filtration Plant

4 filter tanks with sand
Capacity 2,000,000 gals. per day
Rails—Cars and Locomotives—
Equipment

Zelnicker in St Louis

FOR SALE

One 10-ton Macadam roller recently overhauled. As good as new. Attractive price. Write—Donaldson & Taylor, c/o Municipal Journal.

WANTED

One macadam roller at a reasonable price. Size, 10 tons. Buffalo Pitts preferred. Send description and price to—Wayne P. Walters, c/o Municipal Journal.

brick, \$2.19; asphalt, \$1.72; sheet asphalt, \$1.99; asphaltic macadam, \$1.54; curb and gutter, 60 cts. Bids filed with city clerk. Paving Albert St., Milwaukee Ave. to Forest St.—Western Improvement Co., paving, \$2.22; curb and gutter, 59 cts.; Birdsall-Griffith Construction Co., paving, \$2.16; curb and gutter, 60 cts. Conductive Paving Co., paving, \$2.11; curb and gutter, 52 cts.; James Cape & Sons, paving, \$2.20; curb and gutter, 60 cts. Bids referred to Common Council. Paving Douglas Ave., Gould St. to Melvin Ave.—Conductive Paving Co., paving, \$2.14; curb and gutter, 52 cts.; Western Improvement Co., paving, \$2.40; curb and gutter, 59 cts. James Cape & Sons, paving, \$2.34; curb and gutter, 60 cts. Birdsall-Griffith Construction Co., paving, \$2.36; curb and gutter, 62 cts. Bids referred to the Common Council. Paving Mound Ave., Liberty to Maple Sts.—Conductive Paving Co., paving, \$2.11; gutter, 30 cts. a sq. yd. Cape & Sons, paving, \$2.15; gutter, 30 cts. Western Improvement Co., paving, \$2.18; gutter, 30 cts. John R. Griffith, paving, \$2.22; gutter, 39 cts. Birdsall-Griffith Construction Co., paving, \$2.16; gutter, 32 cts. Bids referred to the Common Council. Paving Franklin St., 12th St. to De-koven Ave., Cape & Sons, brick, \$2.22;

sheet asphalt, \$2.10; asphaltic concrete, \$1.84; concrete, \$1.87; curb and gutter, 60 cts.; Western Improvement Co., brick, \$2.19; sheet asphalt, \$1.99; asphaltic concrete, \$1.72; concrete, \$1.77; asphaltic concrete, 60 cts. Johnson Construction Co., Chicago, sheet asphalt, \$2.02; asphaltic concrete, \$1.80; curb and gutter, 60 cts.; Dean Construction Co., Milwaukee, concrete, \$1.77; Birdsall-Griffith Construction Co., brick, \$2.20; concrete, \$1.90; curb and gutter, 62 cts. Bids filed with city clerk. Grading Linden Ave., Birdsall-Griffith Construction Co., excavating cubic yards, 50 cts. James Cape & Sons, 47 cts. per cu. yd. R. R. Jones, 39 cts. on 8-hour day, 34 cts. for 10-hour day. Fred Nelson, 48 cts. Christ Nelson, 54 cts. Bids referred to Common Council.

CONTRACTS AWARDED.

Indianapolis, Ind.—Contract for brick and concrete work in proposed Garfield Gardens in Garfield Park was awarded to J. G. Karstadt at \$24,467. Other bidder was G. Ittenbach at \$27,327.82.

Battle Creek, Mich.—For 18,775 sq. yds. 16-ft. concrete road with 4,500 yds. scratch work excavation, to Wm. H. Ryan, Lansing, Mich., at \$1.39 per sq. yd. for paving, 40 cts. for excavation; total bid \$26,525.

Hastings, Neb.—Mayor Madgett and Council Mar. 20 awarded contracts for paving on 32 new districts. This aggregates about 12 miles of new city roadway. Trinidad Lake and Texico asphalts are to be used in 27 districts, where contract was let to lowest bidders, Watts & Ammerman of Salina, Kan., at \$1.46 per yard. Vitri-fied pressed brick blocks are to be in five districts, where contract went to the Metropolitan Co. of St. Joseph. If Hastings made brick comes up to specifications in tests, the Metropolitan agrees to use them.

Callfon, N. J.—Hunterdon County Board of Freeholders awarded contract for building Hoffman's Lower Valley road to F. P. Meakes of Long Pond, Pa., for \$14,576.44, distance is 1.67 miles. Clinton-West Portal road, 2.80 miles, was awarded to former Freeholder Selg-foos of Milford for \$37,852.14.

Leamington, Ont.—For 11,400 sq. yds. reinforced concrete pavement on foundation, 6½ ins. gravel and sand excavation, average 1 ft. deep, to F. Smithson, Leamington, at \$1.55 per sq. yd., total \$17,600. R. M. Selkirk is Clk.

El Paso, Tex.—On his bid of \$77,368.50, based on County Engineer Charles S. Henning's estimate of quantities, Lee Moor was awarded contract by Commissioners' Court Mar. 21 for paving of approximately 7 miles of upper valley road from point 250 ft. this side of Santa Fe crossing to Borderland Inn.

SEWERAGE

Birmingham, Ala.—Council has confirmed assessments for constructing sanitary sewers.

Chino, Cal.—Bonds totaling \$128,000 for the installation of a sewer system and the construction of several miles of paving have been voted by the citizens. Preliminary to the paving the new sewer system will be laid. This will cost \$55,000 and will also provide a 10-acre sewer farm.

Lowell, Mass.—City is contemplating extension of sewers which will cost approximately \$30,000.

Duluth, Minn.—Petitions have been presented to commissioners for sanitary sewers in Livingston St. from Ladd's court to the south line of Waverly Park; in 97th Ave. West, from Prescott St. to Perry St.; in 95th Ave. West, from Perry St. to Goodhue St.; in Fourth alley, from 29th Ave. East to lot 6, block 3, Sterling division, and in Victoria St., from Columbus Ave. to lot 15, block 4, Brook-line division.

Little Falls, Minn.—Petition for another new sewer will be presented to City Council by property owners of Second St. northeast. It is said that petition, which has already been placed in hands of the city attorney, contains required number of signatures. Petition asks for construction of sewer from First Ave. to Seventh Ave. on Second St. The sewer would be six blocks long.

New Brunswick, N. J.—An ordinance providing for the construction of a 20-in. sanitary trunk sewer continuing the present Mile Run trunk sewer through a territory embracing the upper section of Codwise Ave. and crossing over to Remsen Ave., at a cost of not more than \$12,000 has been adopted by City Commission.